MAR. 17 1961

PETROLEUM WEEK

A McGRAW-HILL PUBLICATION

The economic outlook requires restraints by refiners now. *page 7*

Small independents organize to fight forced pooling. *page 11*

Management turns to 'group dynamics' to fire creativity. *page 13*

Improved techniques are trimming drilling costs offshore. *page 8*

Systematic planning of research spending is a must for oil. *page 36*

Shell to set prices under terms of its Kuwait offshore pact. *page 47*

Price 50 Cents

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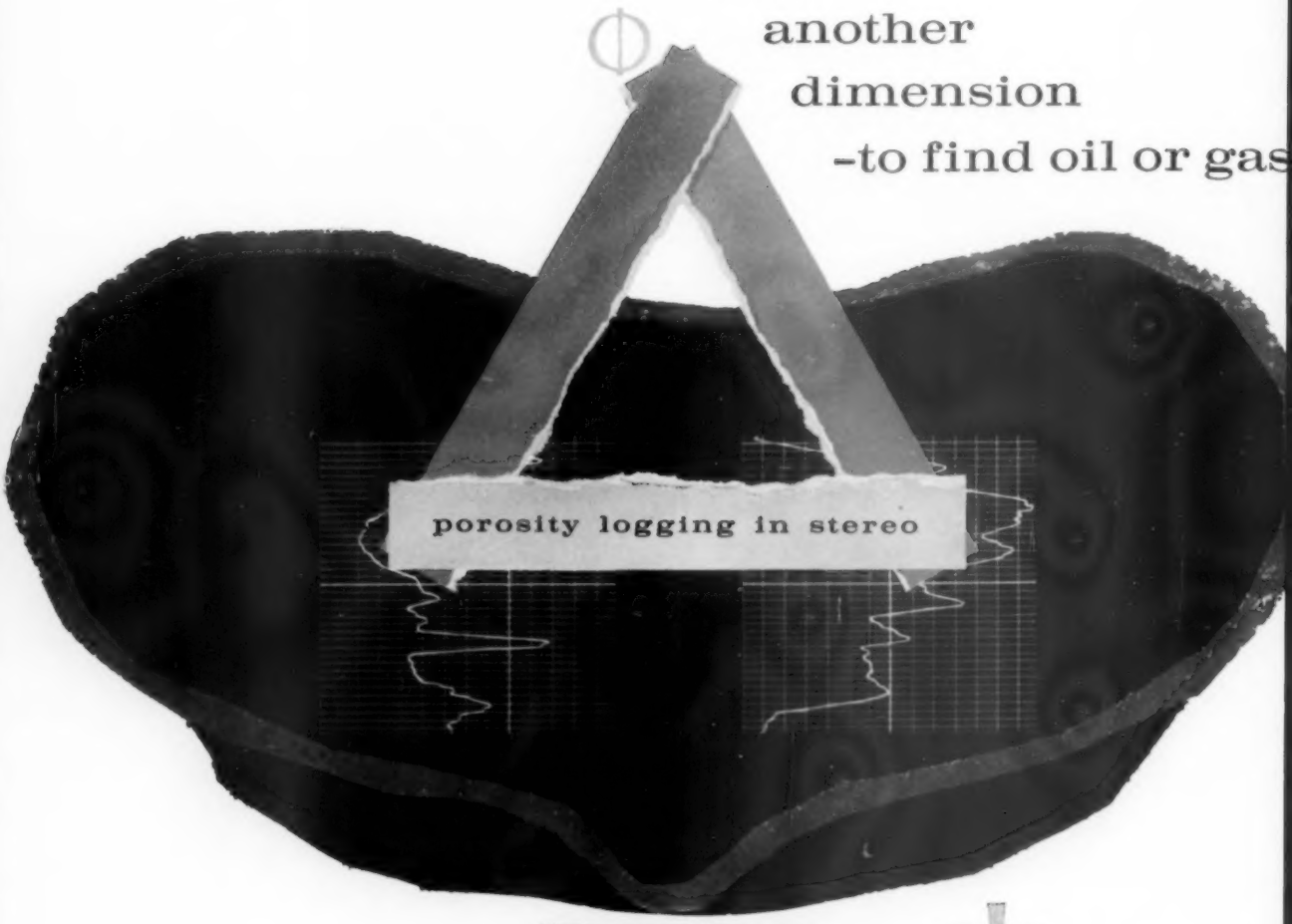
look at another dimension -to find oil or gas



When two porosity devices disagree on the apparent value of porosity, *the difference is significant.*

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Sonic Log Microlaterolog Proximity Log
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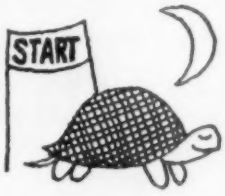
Consult your local Schlumberger engineer to determine the set of porosity logs which will give you an added "oil-finding" dimension.

THE EYES OF THE OIL INDUSTRY

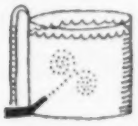
SCHLUMBERGER

Until recently, methods commonly

used to mix antiknocks with ☆ gasoline could require 24 hours or longer.



But then, Ethyl provided a practical application of



jet blending. This method assures even distribution of any components, in much less time and with less costly mixing equipment.

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INSIDE *Slant*

RUSSIANS COMPETITIVE

The Soviets are dedicated to competition.

Not among industries and units within industries to capture customers, but competition among themselves to please Moscow.

This is the opinion of Ira H. Cram, chairman of the executive committee of Continental Oil Co., and a member of the U.S. oil team that toured Russian oil fields last year.

He told a recent meeting of the southern conference of the Controllers Institute of America that the Russians feel:

"Do a better job than the other fellow and you'll be rewarded—perhaps with a medal or bonus or raise in pay, or even a promotion.

"So individually and collectively they do have a drive. It is a bitter pill to be forced to admit that in the oil business, at least, their detestable system is working pretty well—too well."

At the same time, Cram said, the Soviet citizen is dedicated to the system of planned economy.

It is his feeling that the Russian is dedicated to the proposition that he must produce more and more; it is unthinkable to produce less.

LeRoy Menzing
EDITOR

Good Wells Make Good News

A Report on Interesting Acidizing Treatments by Dowell

March 17, 1961

These four recent examples demonstrate a few of the many well conditions that respond to Dowell acidizing.

- **Alberta, Canada** (New Gas Well) When a drill stem test yielded 4 mmcfd, operator decided to complete this wildcat. Pay is the Mississippian lime between 6971 and 7013 feet. Porosity is 5.1 per cent. Solubility is 95.5 per cent. Average permeability of the interval is one millidarcy. There are short, more permeable sections at two levels within this interval. These permeable sections were perforated, washed with BDA* Breakdown Acid and acidized. 30,000 gallons of a special Retarded Acid, with a fluid loss additive, were injected using three Allison-powered pumpers. The Acid Guide* was used to plan this treatment. Production test before treatment was 100 mcfd. After treatment well tested 14.2 mmcfd at 1900 psi on ½-inch choke. (Calculated open flow was 35 mmcfd.)

- **Tom Green County, West Texas** (Abandoned Oil Well) This well in the Mertzon-San Angelo pool had originally been perforated and acidized. It was abandoned temporarily after producing only 3 barrels of oil and eight barrels of water per day. Recently, Dowell was called to help recomplete the well. First, the old perforations from 1550 to 1565 feet were squeezed off using 125 sacks of cement modified with FLAC* fluid loss additive for cement. Next, three holes were jetted at 1558 feet with Abrasijet* -- Dowell's abrasive jetting service. Then the well was acidized with 500 gallons regular acid. After clean-up, well tested 100 bopd; no water.

- **Texas County, Oklahoma** (New Gas Well) A lower section of the Topeka lime (3182 to 3198 feet) tested 3 mmcfd after being perforated and acidized. A plug was set above this section and an upper zone was then perforated from 3090 to 3160 feet. When it also tested 3 mmcfd, communication was suspected. Dowell suggested selective acidizing using rock salt as a temporary plugging material. The upper section was acidized with 15,000 gallons Dowell acid containing demulsifier, surfactant and a silicate control agent. 4000 pounds of rock salt were used in three stages during treatment to block communication with the lower zone and to divert acid into the less permeable sections of the upper zone. After well was swabbed and cleaned up, it tested 14.5 mmcfd from the two zones combined.

- **Lafourche Parish, South Louisiana** (Old Oil Well) This well in the Miocene was mudded off during workover and would not come in despite good porosity and permeability. Dowell acidized with 500 gallons Mud Acid injected between 250-gallon slugs of regular acid containing a demulsifier and an agent to lower surface tension. Injection rate was one bpm at 1700 psi. After acid was swabbed out, well made 115 bopd allowable.

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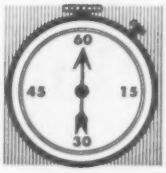
60-Second Summary



THE WEEK'S MOST IMPORTANT DEVELOPMENTS

PETROLEUM WEEK

March 17, 1961

First-quarter demand statistics look good right now—but high refinery runs may alter the picture materially in the not-too-distant future. Total demand for the first two months was up 528,000 b/d over the comparable period of 1960. . . . p. 7

•

The long, long battle against subsidence in the Wilmington (Calif.) field appears to have been won at last. The director of the operation says subsidence has been stopped "for all practical purposes," and that it will be arrested "almost entirely" within another year. . . . p. 18

•

Inflation and spiraling costs are having pronounced effects on research programs in the processing fields. Systematic planning is not merely important; it's imperative. . . . p. 36

•

Retention of a "coal-oil balance" in the industrial fuel field is the basis of the recent changes in resid controls. It represents a swing away from the national-security concept of the past. . . . p. 10

•

Are management's traditional concepts in for a siege of upheaval? It would seem so, with computers and the influx of scientists putting great strains on the old methods of administration. . . . p. 13

•

An oil discovery in the Cambrian sand in Ontario is stirring up interest in deeper drilling in that Canadian province. Up to now, oil production has come only from the shallower Silurian limestones. . . . p. 20

•

Offshore drilling costs ran counter to the general trend in 1959. They dipped modestly while land drilling costs, on the average, continued their upward climb. . . . p. 8

•

Another LPG pipeline system for the plains area and the Upper Midwest is in the making. It'll originate in Kansas and might be ready for operation by the end of this year. . . . p. 34

•

There are many advantages—and disadvantages—in joint ownership and operation of natural gasoline and gas processing plants. The pros and cons were discussed at a Natural Gasoline Assn. of America forum. . . . p. 38

•

Shell gets the specific right to determine posted prices under its new Kuwait offshore pact. The concession agreement, just made public, also calls for regular acreage relinquishments. . . . p. 47

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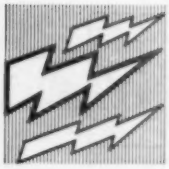
Up to the Minute



SIGNIFICANT LATE NEWS

PETROLEUM WEEK

March 17, 1961

The top executives of most large oil companies anticipate an upturn in demand in the last half of the year. That was the tone of their testimony this week at the Texas Railroad Commission's statewide hearing. But between now and the start of the second half—which is the normally low seasonal demand period—indications point to a further build-up in inventories. As of Mar. 1, 29 purchasers of Texas crude reported that their total inventories of crude and products were 2,920,600 bbl. above the desired level. The largest surplus position was in distillate—6,453,300 bbl. above desired, despite the abnormally cold winter.

The Texas crude allowable for April was trimmed 126,098 b/d to an initial figure of 2,882,021 b/d. Production for the coming 30-day month will be based on nine days, one less than permitted in March. Five purchasers requested the nine-day schedule. But eight companies that sought an eight-day schedule said they would have crude to sell on a nine-day pattern. Gulf Oil Corp., now with 30,000 b/d above its needs, said it would have 50,000 b/d to sell in April.

The recent high refinery run rates—which appear now to be on the wane—are of concern to many company executives, according to their comments in Austin. Several reported cutbacks in March, with further reductions planned for April. American Oil Co. has scheduled March runs at 610,000 b/d, 90,000 b/d below February. April runs will be scheduled 123,000 b/d below February.

•

Two U.S. firms filed for Libyan tracts relinquished recently by other oil companies. The applicants were Phillips Petroleum Co. and the Indiana Standard subsidiary, Pan American International Oil Co. The Italian government-owned ENI also filed for tracts. Applications for the acreage, returned to Libya under provisions of the oil law, were accepted during just one week, Mar. 6-13.

•

The Kennedy Administration gave Congress a hard choice this week on interstate highway funds. Treasury Secretary C. Douglas Dillon, leadoff witness before the House Ways & Means Committee, said Congress will have to hike truckers' taxes 3%, or raise gasoline taxes to 4.5¢ per gal., or extend the interstate construction program beyond 1972.

Committee members were anything but enthusiastic as the Administration's supporters discussed President Kennedy's pay-as-you-go tax package, which includes continuation of the 1¢-per-gal. temporary gasoline tax that's scheduled to expire June 30. Congressmen, instead, eyed the $800-million in taxes on cars and parts that is supposed to go into the highway fund July 1, but which Kennedy wants for other programs.

Industry opposition mounted as the hearing progressed. John E. Swearingen, president of Standard Oil Co. (Ind.), and spokesman for the industry, was expected to testify that gasoline taxes already are at a point of diminishing returns, and that there is no excuse or reason for continued diversion of other federal highway-user taxes into the General Treasury. The Oil, Chemical & Atomic Workers Union also lined up with the industry in opposing continuation of the fourth cent of the gasoline tax.

High Runs May Upset Good Start

The first quarter, with only a couple of weeks to go, received a considerable boost from brisk demand during January and February—a trend that is not guaranteed to continue.

Total demand for the first two months averaged 11,163,000 b/d, or 528,000 b/d over 1960.

Demand was paced by a heavy call for middle distillates, which, at an average of 3,532,000 b/d, were up 11.6% over last year.

Even gasoline was relatively strong for off-season, with demand averaging 3,823,000 b/d—an increase of 3.3% over 1960.

By comparison, total demand last year was weak, largely as a result of the exceptionally mild weather through February.

Demand for all oils during the first two months of 1960 ran 2.3% below the previous year, with distillates demand slipping 7.9%. Gasoline demand was up, but only by a slim 0.8%.

Distillates inventories fell 48.9-million bbl. during 1961's first two months, which did much to snap prices out of the doldrums. But gasoline—the stocks to watch now—gained sharply.

Stocks of kerosine and distillates dropped to 121-million bbl., the lowest point since the beginning of the heating season. That's 7-million bbl. under the year-ago level.

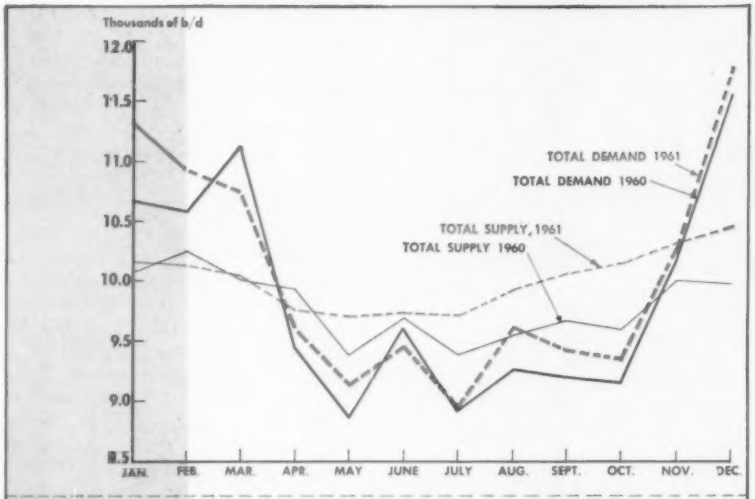
But the drawdown in burning oil inventories was considerably counterbalanced by a sharp increase of 26.2-million bbl. in gasoline.

Some economists have flagged a warning that demand during the second quarter may take a sharper drop than usual this year from the first quarter—as much as 1.6-million b/d.

Demand during the second quarter normally runs from 1-million b/d to 1.5-million b/d below the first quarter. Estimates place second-quarter demand at 9,405,000 b/d, compared with the now-anticipated 11,021,000 b/d during the first quarter of 1961.

Despite the fact that March demand last year was unusually high due to the late cold snap, second-quarter demand averaged 1.5-million b/d under the first quarter.

Refiners kept a step ahead of the drop last year by trimming runs as early as February. Crude throughput was kept well below the 8-million b/d "safe" mark until the summer refining spree that sent stocks soaring and prices skidding.



	February 1961 Thousands of b/d	% Change from year ago	2 Months 1961 Thousands of b/d	% Change from year ago	
Total Demand (Inc. Exports)	10,945	+3.3%	11,163	+ 5.0%	Total Demand (Inc. Exports)
Gasoline	3,907	+3.2	3,823	+ 3.3	Gasoline
Kerosine	517	+7.0	572	+18.9	Kerosine
Distillate	2,734	+7.1	2,960	+10.3	Distillate
Residual	1,837	−7.3	1,858	− 7.7	Residual
Total Supply	10,154	−0.7	10,176	+ 0.2	Total Supply
Domestic crude	7,190	−0.7	7,183	− 0.7	Domestic crude
Nat. Gas Liquids	993	+4.4	944	− 0.4	Nat. Gas L'quids
Total Domestic	8,183	−0.1	8,127	− 0.7	Total Domestic
Crude Imports	1,053	+2.7	1,082	+11.3	Crude Imports
Total Imports	1,971	−3.3	2,049	+ 3.9	Total Imports
Refinery Runs	8,413	+4.3	8,366	+ 2.3	Refinery Runs

The way it looks now, supply will have a 351,000 b/d edge over demand during April, May, and June. The surplus will go to pad inventories.

The forecast is for new supply of 9,765,000 b/d during the second quarter, a decrease of 373,000 b/d from the first three months.

Domestic crude production is expected to average 70,000 b/d under first-quarter levels.

High refinery runs may aggravate the situation. The cuts scheduled so far appear too little to bring crude throughput in line in time for the low-demand season.

Supply and demand were kept in good balance during the first two months, with the percentage increase in refinery runs less than half that of total demand.

Crude throughput averaged 8,366,000 b/d. Although this established a new two-month high, runs were up only 2.3% over last year, against a 5% increase for total demand.

The danger signal is that runs have been on the increase since January, which is contrary to normal demand.

Cuts in crude throughput have been announced. But they haven't made an appreciable dent in over-all industry figures.

Humble Oil & Refining Co. reduced March throughput at its refineries by 76,000 b/d, which the company says amounts to 9% of February runs.

Sinclair Refining Co. plans to cut domestic refinery runs during March and the second quarter 15,500 b/d below the comparable period last year.

The company said it considers the move "prudent in contrast to the industry's high inventories of petroleum products and continuing high level of refinery crude runs in relation to current demand."

Continental Oil Co. has announced a reduction in runs from 196,305 b/d in February to a projected 187,800 b/d in March.

Joint Study Reveals Shift in Drilling

A significant shift in drilling activities in recent years is spotlighted in the latest study of drilling and equipping costs in the U.S.

Revelation of the change is one of the many highlights of the joint effort of the American Petroleum Institute, the Independent Petroleum Assn. of America, and the Mid-Continent Oil & Gas Assn. to throw fresh light on the nature and pattern of drilling costs.

The current study is the third of its kind. It covers drilling activities in 1959, and provides many comparisons with the preceding study (PW—May29'59,p19), which embraced the 1955-56 period.

This one is the more complete, however, and separates oil, gas, and dry-hole statistics for the first time. Breakdowns are included on the number, footage, and per-foot costs of holes.

The shift in the drilling pattern affected six key states—Texas, Louisiana, Oklahoma, California, Kansas, and New Mexico.

The study found that, on the basis of expenditures, these six states accounted for almost 85% of the country's drilling activities in 1956. In 1959, however, the six states accounted for slightly less than 80% of all drilling expenditures.

Even within this six-state group, the study showed, there was a considerable shift.

Texas accounted for 35.7% of the nation's drilling expenditures in 1956, and 33.2% in 1959—a decline of 2.5 percentage points. Oklahoma, California, Kansas, and Louisiana spent less on drilling in 1959, too, and their percentage relationships changed.

New Mexico was the only state in the group that drilled more holes and had greater expenditures in 1959 than in 1956. Most of the additional drilling was in the shallow depth brackets, however, so that expenditures increased only slightly.

Other states that had higher levels of drilling activity in 1959 than in 1956 included Utah, Mississippi, North Dakota, and Kentucky.

Although these states accounted for only a small part of total drilling operations, their combined drilling expenditures increased from 3% of the U.S. total in 1956 to almost 7% in 1959.

Offshore costs declined 8% in 1959, reflecting improved technological developments and know-how.

The average offshore test cost $383,000, or $38.34 per ft., in 1959, compared with $415,000, or $42.38 per ft. in 1956. At the same time, the average depth increased 400 ft.

There were three fewer holes drilled offshore in 1959 than in 1956—but footage was greater—4.7-million ft. vs. 4.5-million ft.

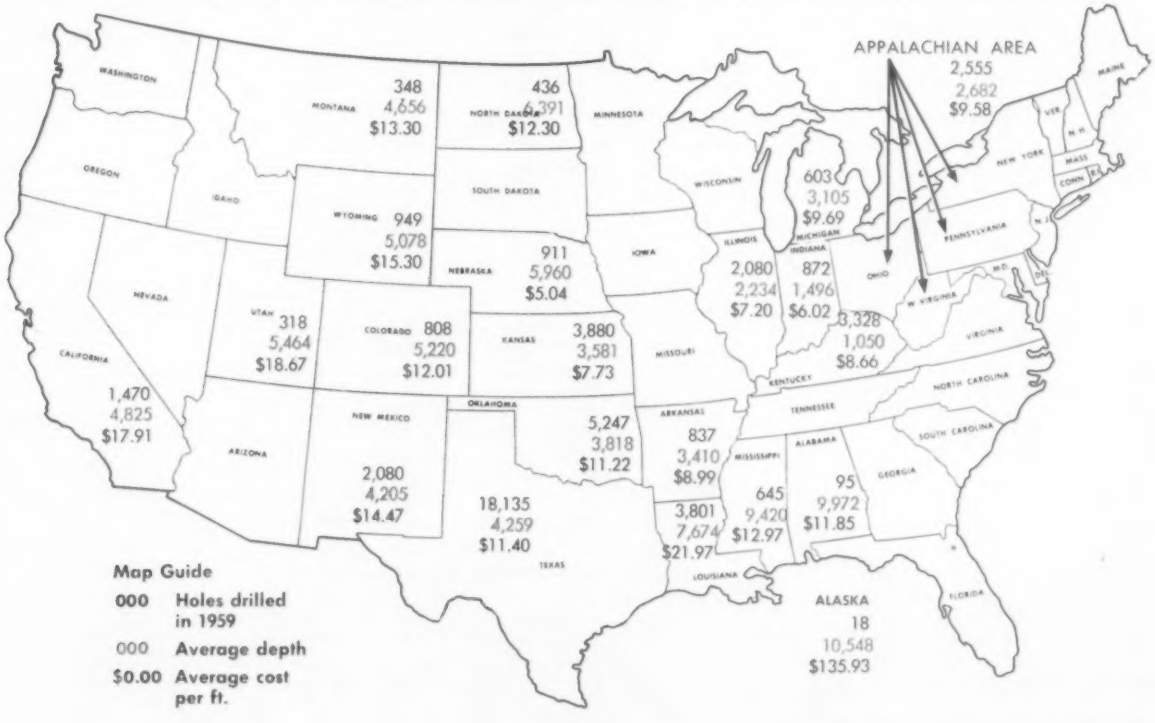
"The decline in offshore per-well and per-foot costs since 1956—in the face of substantially higher prices for all types of drilling equipment—is attributable primarily to improved technological developments and know-how in this type of drilling," the study reported.

"In addition, a substantially greater number of offshore wells drilled in 1959 were classified as field wells as opposed to the more costly wildcat wells."

The study also pointed up a basic fact that oil men are well aware of—that the primary reason for soaring drilling costs is the need to go deeper into the ground to find oil and gas reserves.

In 1959, the study found, 18% of the total footage and 6% of all holes

In 1959, footage costs ranged from $5 to $135 depending upon the state



drilled were in the 10,000-ft.-plus range. Comparable figures for 1956 were 14% and 5%, respectively.

The deeper tests also accounted for 34% of total drilling expenditures in 1959, compared with 29% in 1956.

Drilling costs rose sharply with every additional foot that bits ground into the earth.

In 1959, for example, there were 1,943 holes in the 10,000-to-12,500-ft. range, at an average cost of $226,880 each. In the 12,500-to-15,000-ft. range there were 814 holes, and for these the average cost jumped to $378,700 per hole. The geometrical increases continued at depths exceeding 15,000 ft. There were 220 holes in this category, and the average cost of each was $656,100.

Total expenditures for drilling and equipping declined in 1959—although average costs did not.

There were fewer holes drilled in the U.S. in 1959—49,563, vs. 57,125 in 1956, the peak year. Footage totaled 205-million ft. in 1959, compared with 232-million ft. in 1956.

Total expenditures in 1959 amounted to $2.6-billion, compared with $2.8-billion spent three years before.

The significance of these figures, however, is this: Though the number of holes declined 13% and footage was down 11.5%, total expenditures dropped only 7.5%.

The average cost of drilling a hole rose 6.6%—from $50,200 in 1956 to $53,500 in 1959.

These figures are even more striking when only productive wells are taken into consideration. The average cost of drilling and equipping a productive well rose from $55,600 in 1956 to $60,100 in 1959. On a footage basis, this was $1 a ft. more.

Gas wells were considerably more expensive than oil wells in 1959—costing almost twice as much to drill and complete.

The breakdown indicated that the average gas well ran better than $100,000, or $18.45 per ft. Comparatively, oil wells averaged $52,000 each, or $13.63 per ft.

Gas wells were deeper, too, on the average. Average depths in 1959 were 5,464 ft. for gas wells and 3,814 ft. for oil wells. When dry holes are included in the count, the average depth for all tests was 4,146 ft.

There was no material change in the ratio of dry holes in the 1956 and 1959 studies. This ran about 38% for both years, the study said.

Principal Findings at a Glance

In 1959, drilling costs totaled $2.6-billion...

	Oil	Gas	Dry	Totals
Holes drilled	25,413	5,049	19,101	49,563
Footage drilled (000)	96,931	27,585	80,996	205,512
Expenditures (000)	$1,321,426	$508,895	$820,775	$2,651,096
Average depth	3,814	5,464	4,240	4,146
Average cost	$52,000	$100,700	$43,000	$53,500
Average cost per ft.	$13.63	$18.45	$10.13	$12.90

Footage was down, but average costs were up...

	Productive wells (oil and gas)		Totals (including dry holes)	
	1956	1959	1956	1959
Holes drilled	35,280	30,462	57,125	49,563
Footage drilled (000)	143,611	124,516	232,174	205,512
Expenditures (000)	$1,959,000	$1,830,000	$22,868,000	$2,651,000
Average depth	4,071	4,088	4,064	4,146
Average cost	$55,600	$60,100	$50,200	$53,500
Average cost per ft.	$13.64	$14.70	$12.35	$12.90

And the deeper the hole, the greater the cost...

	Productive wells		Dry holes	
Depth range in feet	Average cost per ft.	Cost per incremental ft.	Average cost per ft.	Cost per incremental ft.
0- 1,250	$9.44	...	$5.27	...
1,251- 2,500	9.19	$8.98	5.29	$5.30
2,501- 3,750	10.11	11.39	6.10	7.29
3,751- 5,000	10.61	11.91	6.76	8.33
5,001- 7,500	12.73	17.85	8.02	11.09
7,501-10,000	16.94	27.48	11.63	20.56
10,001-12,500	22.34	41.06	16.90	34.74
12,501-15,000	30.84	72.79	24.26	59.03
Over 15,000	42.07	101.50	38.78	109.78

Hole costs varied, ranging from $6,000 to $600,000...

Depth range in feet	Number of holes	Average depth (ft.)	Average cost per ft.	Average cost per hole
0- 1,250	6,977	765	$7.84	$6,000
1,251- 2,500	9,873	1,830	7.74	14,200
2,501- 3,750	11,439	3,115	8.70	31,200
3,751- 5,000	6,578	4,370	8.96	39,200
5,001- 7,500	8,040	6,175	10.70	66,000
7,501-10,000	3,679	8,655	15.00	129,800
10,001-12,500	1,943	11,175	20.29	226,800
12,501-15,000	814	13,480	28.08	378,700
Over 15,000	220	16,115	40.71	656,100

Technology cut offshore expenditures 8%...

	1956			1959		
	Holes	Footage (000)	Expenditures (000)	Holes	Footage (000)	Expenditures (000)
Calif.	14	111	$3,838	29	114	$3,928
Fla.	...	...	...	3	29	$1,460
La.	426	4,122	$176,778	441	4,584	$175,047
Tex.	39	361	$18,170	3	30	$1,924
Totals	479	4,594	$198,786	476	4,757	$182,359
	Average cost per hole		$415,000	Average cost per hole		$383,000
	Average cost per ft.		$43.28	Average cost per ft.		$38.34

Coal-Oil Balance Sets Resid Imports

The Kennedy Administration has broken away from the national security origin of import controls and has swung to a plan designed to protect the "coal-oil balance" in the industrial-fuel field.

That is the significance of the plan to control residual fuel oil imports that starts Apr. 1.

The new plan does provide more flexibility to importing companies by scheduling imports on an annual rather than a quarterly basis. But many oil men are concerned with the approach used.

Interior Secretary Stewart L. Udall said that "the most important" difference between the new and old plans is that the "basic changes are away from the direction of monopoly."

"As far as the coal-oil balance goes," he added, "it is our view that this change, which affects the allocation of the oil rather than the quantity . . . gives the program more stability, and should be reassuring to the coal people, and we hope they will view it in that light."

One of the primary reasons for continuing controls on residual imports, according to one Interior Dept. official, is to "prevent any price break that would greatly upset the relationship with coal."

They reason that lifting controls on resid, as has been demanded by some oil companies, would bring in a "flood" of oil—which, in the long run, would "penalize consumers if coal were driven out entirely."

The Administration's views on residual controls raises the question of what type changes may be in store on other petroleum imports (page 16).

Udall has indicated that hearings will be held this spring on the existing control plan for crude and light products imports. Presumably, the hearings would be similar to the one-day affair held on residual imports, where all interested parties—including the coal industry—would be permitted to speak.

The basic technical change in the new residual program is that the "historical" import allocations for East Coast importers will be replaced gradually by quotas pegged to deepwater terminal inputs.

Heretofore, residual import allocations have been limited to companies that were importers of record in 1957, with each sharing in the total allocated, on a percentage basis.

The new plan affects only the eastern seaboard—District 1. Starting Apr. 1, the over-all permissible level of imports will be set after the Bureau of Mines estimates the "deficit" between demand and U.S. refinery resid output. That will be done each year.

The maximum allocation for the 12 months starting Apr. 1 has been set at 461,427 b/d, a level that is 22,000 b/d above the 1960 resid imports into the East Coast.

For the first year, the present historical importers will receive 85% of their 1957 resid ratio. But in each subsequent year, the percentage will be reduced by three points.

Gradually, those firms will have to switch to deepwater terminal inputs to determine their allocations.

Newcomers that own deepwater terminal facilities and sell resid in District 1 will be allowed to import, based on terminal inputs.

Their allocations will be based on a sliding-scale method. For inputs up to 1,000 b/d, a terminal operator will receive 100% in import allocations. But the scale drops sharply (41% from 1,000 b/d to 5,000 b/d) to 10% of inputs of 30,000 b/d and above.

Udall said such a method "will stimulate competition in the industry."

The rules governing what can be counted as terminal inputs are considered rigid by many operators.

The basic requirement is that a firm must have "management and operational" control of any volume of resid to be counted as an input. The resid must go through a terminal operated by the company seeking a quota, unless it is sold direct to a consumer who is not a reseller. Resid must be used as a fuel to be counted.

The rules limit the volume of resid imports in the April-June period to 20% of the year's quota.

There is a 16% limit in the July-September quarter, a 27% limit in the October-December quarter, and a 37% limit in the January-March period. Underages in the April-June quarter can be made up later.

Residual sellers without terminal facilities have a period of grace to enter the plan by acquiring deepwater tankage.

A set-aside, amounting to 2% of the initial allocation, will be assigned to companies that acquire deepwater terminals by Sept. 30.

The present residual importers are:

Ashland Oil & Refining Co.
Atlantic Refining Co.
Ballard Oil Co.
Buckley Bros., Inc.
Canadian National Railways

Central Petroleum Corp.
Colonial Oil Industries, Inc.
George Hall Corp.
Gulf Oil Corp.
Hess, Inc.

Inland Terminal, Inc.
Kaneb, George T.
Massena Terminal, Inc.
Metropolitan Petroleum Corp.
New England Petroleum Corp.

Pure Oil Co.
Royal Petroleum Corp.
Shell Companies
Signal Oil & Gas Co.
Sinclair Oil Corp.

Socony Mobil Oil Co.
C. H. Sprague & Son Co.
Standard Oil Co. of Calif.
Standard Oil Co. (Ind.)
Standard Oil Co. (Ky.)

Standard Oil Co. (N.J.)
Steuart Petroleum Co.
Texaco Inc.
Whale Oil Co.
White Fuel Corp.

Ten of the historical importers will benefit by a change to terminal inputs, Interior officials say:

Atlantic Refining Co.
Belcher Oil Co.
Gulf Oil Corp.
Kaneb, George T.
Pure Oil Co.
Royal Petroleum Corp.
Sinclair Oil Corp.
Socony Mobil Oil Co.
Standard Oil Co. of Calif.
Whale Oil Co.

As of now, 13 newcomers are expected to get quotas starting Apr. 1:

Cities Service Co.
Consolidation Coal Co.
Deepwater Oil Terminal, Inc.
Northville Dock Corp.
Patchogue Oil Terminal
Pickering Co.
Preferred Oil Co.
Sears Oil Co.
Southern States Oil Co.
Sun Oil Co.
Tidewater Oil Co.
Union Oil Co. of Boston
Wyatt Oil Co.

Reaction to Normanna gas ruling:

Texas Independents Fight for 'Rights'

Texas independents rallied forces this week in a swift effort to combat the forced pooling or mandatory unitization they predict will result from the state Supreme Court's ruling in the Normanna case.

In its historic decision last week, the court held invalid the Texas Railroad Commission's allocation formula for gas fields. The order, based on one-third well, two-thirds acreage, had been applied to a gas well drilled on an 0.3-acre tract in the Normanna field, Bee County, by Bright & Schiff, of Dallas.

Atlantic Refining Co. charged the order was discriminatory and would enable Bright & Schiff to produce $2.5-million worth of gas over a 20-year period, though "a reasonable estimate" of the value of gas under the property was only $7,000.

The decision brought quick reaction from independents, who generally interpreted the ruling as a fatal blow to small-tract drilling.

The independents set up a new organization to seek protective legislation and to take other action necessary to "defend property rights."

Stanley B. Woods, president of Woods Exploration & Producing Co., Houston; Roy T. Walker, Austin royalty owner; and C. L. Wright, Corpus Christi royalty owner, issued the call for the organization meeting—held in Austin this week.

In a joint statement issued before the meeting, the trio said:

"The decision by the Texas Supreme Court in the Normanna case applied to that field only. Yet it will be used as a wedge to clear the path for mandatory pooling or field unitizing, or both.

"There are those who will seek to capitalize on this decision to penalize further the small landowner and oil and gas operator, with the ultimate objective of unitizing his land. If we don't defend these property rights now, if we don't stand up with the Railroad Commission, we will lose those rights."

The Normanna ruling also had repercussions on the legislative front. A bill to minimize the impact of the court decision was introduced in the Texas legislature.

Rep. Stanley Boysen, Yoakum, beat the bill-filing deadline last Monday by hours in submitting a new gas proration bill (H.B. 1,025). The bill would require the Railroad Commission to base at least one-third of its gas allocation formula on the number of wells in a field.

Some Texas producers, however, approve the court's ruling.

Several major company spokesmen indicated satisfaction with the ruling. One told PETROLEUM WEEK:

"We are pleased with the decision, and agree with comments by others to the effect that this is a step in the right direction, toward curbing unnecessary and wasteful drilling practices.

"This is not a cure-all measure, however, and won't completely solve the small-tract drilling problem."

George Mitchell, president of Christie, Mitchell & Mitchell, added that the decision does not necessarily mean the institution of forced pooling, "since the commission still has the decision of preparing a reasonable allocation formula for gas as well as oil."

Michel T. Halbouty, Houston independent who has been a leading antagonist in the fight to abolish small-tract drilling, cheered the ruling.

"This is a landmark decision," he said. "I predicted two years ago that the court would have to recognize that the one-third, two-thirds allocation formula is arbitrary and illegal when applied as a general rule.

"The court has renewed my faith and made me feel that my own fight for abolishing arbitrary allocation formulas has not been in vain."

While the court ruling applied to the Normanna field alone, the consensus is that the legal doctrine has been laid down, and that it will be applied in any future cases that may arise concerning either gas or oil.

One of the key statements in the court decision is that the commission "is given broad discretion in accomplishing the purpose of giving each party an opportunity to produce its fair share of the gas in the reservoir."

This "fair-share" proviso undoubtedly will be invoked in cases that may come up in the future.

One major company that has opposed small-tract drilling maintains that pooling would enable each small-tract owner to participate "on a fair and equitable basis." It also notes that such regulations have been adopted in several states.

The Normanna ruling also overturns the Hawkins decision of 1946, up to now the basic legal support for small-tract drilling.

That case held that the Railroad Commission had the right to issue such orders and exceptions to Rule 37 (spacing rule) as needed to prevent confiscation of property. "As a corollary," the court held, the owner of a small tract could not be denied the right to drill "at least one well on his tract, however small it may be. From which it would seem that his allowable can not be cut down to the point where his well would no longer produce, nor below the point where it could be drilled and operated at a reasonable profit."

The Texas Railroad Commission now faces the task of coming up with a new gas proration formula.

The Supreme Court ducked this issue and tossed it back to the commission, stating:

"It has been suggested in some of the briefs that this court might set some rule or standard by which the commission should be guided in regulating the production of gas. This court will not undertake to do so.

"We recognize that the Railroad Commission alone is authorized to make the rules regulating the production of oil and gas. While such rules are subject to review by the court, the court cannot substitute its judgment for that of the commission.

"A court can only pass on the validity of a rule or order when properly presented to it for review. The responsibility rests with the commission to devise some rule of proration which will conserve the gas in the field in question and at the same time be fair and just to all parties without depriving any of them of his property."

editorial index

The index to the editorial contents of Petroleum Week, covering the issues published from July through December, 1960, is now ready for distribution. Single copies are available to subscribers without charge. Readers who have previously asked to be placed on the permanent mailing list will receive the index automatically. **Others may address requests to Editor, Petroleum Week, 330 West 42nd Street, New York 36, N. Y.**

Area Price Hearing Resumes in April

Come Apr. 12, the Federal Power Commission will make another attempt to lay the groundwork for its area pricing program for natural gas.

The locale of the next go-round will be Washington. And, it was indicated, there will be still another preconference hearing after that one.

The first session, with Permian Basin producers and others in Midland, Tex., last week, bogged down almost from the start, and was recessed abruptly after 2½ days of wrangling.

It had been anticipated that the Midland conference (picture, below) would last at least a week to ten days.

But ruckuses developed quickly over a proposed FPC questionnaire, and the type of cost data that would be required for the formal hearings later.

Despite the lack of specific results, however, it was agreed that the Midland meeting showed some signs of progress.

FPC Examiner Edward B. Marsh, who has been assigned the task of recommending ground rules for the formal hearings, phrased it this way:

"I believe we accomplished a great deal, although we did not accomplish the basic purpose of the prehearing conference."

And there was a show of harmony shortly before the recess—almost an anticlimax to the two days of discord and confusion that preceded it.

The next session, in Washington will endeavor to settle the differences over the cost data that will be submitted later as evidence.

This was the point that triggered the recess.

Alfred C. DeCrane, attorney for Texaco Seaboard, Inc., Houston, filed a motion asking FPC to simplify the issues with a special ruling saying that area price ceilings are not to be based on utility-type cost factors.

The only opposition to the motion came from distributor-consumer spokesmen, and Marsh gave them until Mar. 27 to file their objections.

Marsh said he would certify the DeCrane motion to FPC after his return to Washington. And he expressed hope that the commission will have acted on it by Apr. 12.

The Midland recess was suggested by Kenneth Heady, of Phillips Petroleum Co., who objected vigorously to FPC's questionnaire on costs.

Heady, spokesman for a group of 50 large and small producers, contended that the 109-page FPC questionnaire was pegged to a cost-of-service approach that posed a threat of utility-type controls.

The questionnaire also was attacked as being too bulky, and too expensive and extensive for small producers to handle.

The producer group prepared a suggested questionnaire of its own, and Marsh indicated that areas of agreement would be sought at the Apr. 12 session.

John C. Mason, FPC general counsel, conceded that the 109-page questionnaire could be used in determining cost of service, but insisted that it was not prepared for that purpose.

He suggested that some method was needed to compile the data separately for small producers. And, he went on, FPC representatives would hold informal conferences with small operators to discuss a shorter form.

Mason told the conference that the questionnaire was prepared originally in an effort to speed proceedings at the formal hearing. He noted, however, that there had been much criticism, but few constructive suggestions.

Clayton Orn, of Ohio Oil Co., who also spoke for Texaco, Socony Mobil, Gulf, and Shell, urged the commission to give those attending the conference a "better understanding" of the key issues.

MIDLAND HEARING was conducted by Chief Examiner Edward B. Marsh (at table, foreground) and General Counsel John C. Mason, of the Federal Power Commission.

Exempt Imports Average 7% of January Total

January imports of all oils averaged 2,194,404 b/d, of which 157,275 b/d—or 7%—were exempt from controls, via overland routes from Canada and Mexico.

Districts 1-4 received 84,038 b/d of exempt Canadian crude and unfinished oil, and 7,793 b/d of Mexican crude and unfinished oil, for a total of 91,931 b/d. District 5 received 60,391 b/d of Canadian crude and unfinished oil during the same period.

An additional 4,353 b/d of light products were brought into Districts 1-4 from Canada. Canadian exports of light products to the West Coast averaged 700 b/d.

The January import totals were up sharply from the previous month and from January, 1960. At the same time, U.S. exports of all oils declined in January to 162,382 b/d, from 189,937 b/d in January, 1960.

This is the company-by-company breakdown for exempt crude imports:

Dists. 1-4 from Canada	***b/d***
Continental Oil	12,912
Great Northern Oil	31,931
Gulf Oil	5,013
Lakehead Pipeline	438
Murphy Corp.	9,673
Northwestern Refining	9,160
Osceola Refining	321
Socony Mobil	6,779
Standard (Ohio)	5,069
Union Oil	90
Others	2,652
Total	**84,038**
Dists. 1-4 from Mexico	
Cities Service	5,907
Western Nat'l Gas	1,886
Total	**7,793**
Dist. 5 from Canada	
Shell Oil	12,378
Socony Mobil	34,394
Texaco	13,619
Total	**60,391**

SUPERVISOR
MOTIVATION, STIMULATION
NEW IDEAS, PLANS, CREATIVE RESEARCH
The New Influx of Industrial and Social Scientists Is Altering the Relationship Between Supervisor and Employee

Oil Puts the Accent on Creativity

Oil companies today are giving their management methods a long hard look.

Gradually, they are beginning to admit that their long-standing approach to supervision and administration does not entirely fit the requirements of today's business environment.

They are discovering that they must develop a completely new understanding of motivation and creativity (page 14).

"Our product is really ideas. And once you understand this, your whole approach to management must change," is the way one industrial relations executive summed it up for PETROLEUM WEEK last week.

The energy behind this re-evaluation has been generated by the new influx of professionally trained scientists into the oil industry.

Oil companies, of course, have relied for decades on geologists and chemists, for example, to furnish invaluable assistance in finding and refining oil.

But not until after World War II did the immigration of the professional scientist into the oil industry attain such formidable proportions.

One major company estimates that 40% of its payroll is represented by highly trained white-collar workers.

In the late 1940s, it watched, along with other companies, the infiltration of psychologists, sociologists, and other social scientists into marketing, industrial relations, and economics.

In the 1950s, mathematicians, systems analysts, and industrial scientists arrived. They began filling laboratories and offices with talk of game theory, cueing theory, servomechanism theory, linear programming, and all the new techniques of operations.

The rapid acceptance of the computer has provided another powerful influence on management thinking.

Whole new departments here had to be created almost overnight to feed problems into the inexhaustible maw of these machines. And even when the problems have been delineated, a new mental posture is required to carry them to solution.

One company, for example, that is using a computer for investment planning, found it needed to accumulate in one program all the factors that could substantially influence profit.

This called for a consideration of how one affiliate interacts upon another, and also for a study of how the gains in one segment of a company are limited by the capacities of another.

Once the company's researchers had completed these studies, they ran scores of investment factors through the computer in over 100 combinations, including some that were very unusual.

Such projects place a new burden on managers. Not only must they be able to stimulate the kind of thinking required, but they must know how to analyze the results.

They must look not so much for logic and method, but rather for imagination and daring.

One change that all this may bring is a discrediting of the line-staff concepts of organization that have become so accepted by oil companies.

Here again, computers and professional scientists are working their effect.

With computers assuming more and more of the routine, plodding decisions, management is free to open new vistas of control and planning.

The impact of this breakthrough has not yet been fully understood. But in one company after another, it has given rise to talk about "management by exception."

According to this method, only exceptional cases—cases that fall outside the program of a computer—will be decided by management.

Such decisions will not be made

through experience (few people have experience in dealing with situations that rarely occur). Creative thinking is what is needed.

The inevitable conclusion of this trend of management, one oil company believes, is the elimination of the line manager. He will be replaced by staff professionals who have been delegated line responsibilities.

This may not happen until 1975, but the company is preparing for it now.

Is management prepared for the upheaval in its techniques of administration and personnel supervision? Many training executives say no.

Too often, they say, scientists are faced with an intellectual bottleneck because their methods are treated with hostility by management.

Too often, potentially fruitful research is squelched because a scientist is denied permission to exceed the bounds of his immediate specific assignment.

There are some industrial advisers who believe that this situation will be overcome by the gradual influx of business-school graduates, most of whom are being exposed to new techniques in decision-making.

But at least one major oil company is not waiting for the composition of its management to improve with time.

It has quietly and without publicity prepared a survey project aimed at isolating those characteristics that make "a good manager."

Once it is armed with these selection criteria, it will gauge its new management applicants against them.

The first step is to determine who the good managers are. Here the company will use three primary guides: salary improvement, job advancement, and an evaluation by superiors.

The all-important ability to handle technically trained subordinates, the company believes, will be reflected in those three factors.

How to Stimulate Original Research

How does a manager motivate a scientist to do his best work? This has become a central question for training executives and industrial relations specialists.

Some exploratory research has already been focused on the problem. In many instances, it has been centered on group dynamics—the study of people working together.

One major oil company, which is carefully guarding its findings in this area, has already drawn up a far-ranging program of analysis of its professional employees.

Some of its fundamental thinking stems from an investigation conducted by a social scientist who interviewed a sample of the company's professionally trained employees.

"What motivates you anyhow?" he asked them candidly. "What are you striving for? What keeps you going?"

From the answers he received, the analyst was able to rank the employees in terms of their motivation.

He then compared each individual with a value rating placed on him by his superior. The correlation was clear: "With one or two exceptions, the stronger the motivation, the higher the value [of the employee] in the company's eyes."

But motivation alone is not enough. The additional question arises: Should a scientist be oriented primarily toward his profession, or toward his company?

Does a research scientist, for example, do his best work when he believes he is advancing the frontiers of knowledge? Or are prestige and promotion within the company more powerful incentives?

One study of this problem—performed by the University of Michigan—showed that superior performances are turned in by individuals who are strong in scientific orientation and weak in their desire for company recognition.

Another question that managers must decide is how much supervision they should exercise over the professionally trained scientist.

Dr. Donald C. Pelz, a director at Michigan University's Survey Research Center, told PETROLEUM WEEK last week that his preliminary findings indicate that frequent—even daily—contacts between a scientist and his supervisor enhance performance.

What goes on in these daily encounters? Pelz isn't sure, but he believes that frequent meetings give the supervisors a chance to demonstrate their enthusiasm for the work of their subordinates.

They may offer suggestions, or comment on related work. But whatever they do, they seem to provide motivation.

This day-to-day contact between supervisor and scientist has been called "participative management." It carries with it the underlying implication of leadership, which supersedes the order-response mechanism that characterizes traditional "directive management."

Along these same lines, there is the belief that daily interaction among scientists of differing outlooks and background may provide the mutual stimulation which results in higher research productivity.

To promote such interaction, Pelz would go beyond the mere mechanical arrangements (as provided in office layouts) that mix scientists of various disciplines.

He would recommend some formal grouping—in special projects or committees—where men with differing outlooks can be brought together repeatedly.

It is here that employees with practical goals—who are not considered especially valuable for the research they conduct—become important.

Pelz feels, "They may serve as catalysts to stimulate the research output of their more academically minded colleagues."

While Pelz believes that frequent contacts among scientists of similar views tend to reduce productive thinking, he did find that a scientist needs the daily contact of one significant colleague whose views coincide with his own.

These colleagues apparently provide the necessary moral support to scientists who are probing into areas where tentative findings may subject them to skepticism, ridicule, or other group pressures.

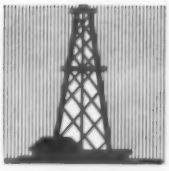
Another question in group dynamics that must be decided is when to disband a committee before it loses its effectiveness.

A study performed at the Massachusetts Institute of Technology provides insight here.

After superimposing a set of performance criteria over the work of various research teams in 21 laboratories, MIT demonstrated that ineffectiveness sets in after two years.

New groups, under two years of age, were found performing better than teams that had been together for three to five years.

Here again, the stimulants achieved in mixing individuals with differing views seem to override the gains derived from long familiarization of scientists with each other.

What's New  IN THE INDUSTRY

Tidewater Oil Co. and Indiana Standard's Pan American Petroleum Corp. were named this week as the favorites in the Honolulu Oil Co. sweepstakes.

L. A. Cranson, Honolulu president, said the joint bid made by the two companies had been selected by a special board committee as the most promising of the many that were submitted for its assets of $99.1-million.

Cranson said negotiations will be started promptly but cautioned that much time probably will elapse before the outcome is known because of legal complications.

Reportedly 50 bids had been received by the Honolulu board for the company's properties, which include crude reserves estimated at 500-million bbl. Most of the reserves are subject to secondary recovery techniques.

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A bill to strengthen the common purchaser act in Texas has been introduced in the legislature.

Two representatives—G. W. McIlhany of Wheeler, and Maco Stewart, of Galveston—have proposed that all who buy crude must be common purchasers and be required to take ratably all crude tendered to them at producers' expense, within limits of allowables set by the Railroad Commission.

The bill's emergency clause states that the law on ratable taking has been weakened by court interpretations, and that discrimination and preferential buying have resulted.

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A federal law to automatically cut work hours any time unemployment in the nation becomes serious has been proposed by O. A. Knight, president of the Oil, Chemical & Atomic Workers Union.

Under his proposal, a federal law would require shorter work day or week when figures of the U.S. Bureau of Labor statistics show excessive output, rising unemployment, and a lack of consumption.

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Overriding commission paid by TBA manufacturers to oil companies that promote their products were declared illegal this week by the Federal Trade Commission.

The commission made its sweeping ruling in two of three related cases presenting the divorcement issue. If upheld by the courts, the rulings will abolish overriding commissions. The commission implied some approval of the method of TBA distribution by which oil companies buy TBA for resale to their own stations.

Chairman Earl W. Kintner, who wrote the opinions, agreed with Hearing Examiner Earl J. Kolb that Atlantic Refining Co. and Shell Oil Co. used coercion or intimidation to induce their dealers to handle sponsored TBA items manufactured by Goodyear Tire & Rubber Co. and Firestone Tire & Rubber Co.

The commission went beyond Kolb's ruling, however, and ordered an end to sales commissions of between 7.5% and 10% of the net sales value of TBA paid by Firestone and Goodyear to the oil companies.

A third case, involving B. F. Goodrich Co. and Texaco Inc., was remanded to Kolb for further market data on the competitive effects of sales commissions paid to Texaco. But the FTC said that from the evidence available, there was a "possibility of serious potential threat" to competition.

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Crescent Petroleum Corp.'s diversification program has taken it considerably beyond the oil business, according to W. H. Garbade, president. He told the New York Society of Security Analysts this week that most of Crescent sales in 1960 came from its non-petroleum properties.

•

The price of Kentucky crude in the Greensburg field, Green County, area has been increased 15¢ a bbl. by Ashland Oil & Refining Co. The new flat price is $2.80 a bbl., effective Mar. 1. The increase affects 4,300 b/d.

The company says the price increase is designed to encourage efforts to increase ultimate recovery from the field.

•

Cities Service Petroleum Co. has completed its purchase of producing properties from Felmont Petroleum Corp. Included are 30,000 acres of lease with production of 4,550 b/d of oil and 4-million cf/d of gas. The properties are located in western Kentucky, southern Indiana, the Texas Panhandle, and Ontario.

Looking Ahead in Washington

McGraw-Hill
Washington Bureau

March 17, 1961

Oil's first brush with the New Frontier, the residual fuel decision, holds keys to the way future oil questions will be handled.

•

President Kennedy was kept informed of details on a day-to-day basis after the Feb. 20 public hearing. This can't be written off as reflecting his keen interest as a New Englander, or his concern with coal region unemployment. He manages to stay close to far less weighty problems.

This keeps policy matters in the top echelon, and Interior Secretary Stewart L. Udall stayed at the center as the resid decision was made. Udall, Assistant Secretary John M. Kelly, and advisor J. Howard Marshall decided what should be done, and then called in the technical staff to do it.

•

Broad-based public hearings, favored by Udall, will be important. The record made on Feb. 20 became the basic document for Udall, Kelly, and Marshall, and they didn't seek any outside advice after the public session.

Speed and politics will also be ingredients. Udall did the one thing old hands at the Interior Dept. said he couldn't do: He changed the regulations in time for the period starting Apr. 1. And the emphasis on "balance," from Kennedy on down, showed that the new Administration is as responsive to political forces as the old.

•

Joseph C. Swidler knows of no change in Kennedy's plan to make him Federal Power Commission chairman. Congressional sources say there isn't enough opposition in the Senate to block Swidler's confirmation as commissioner. There are signs, however, that White House assistants are trying to solve the apparent impasse resulting from Jerome K. Kuykendall's legal claim to the chairmanship until his term as a member expires in June, 1962. Even if Kennedy had to delay making Swidler chairman until then, there's no reason to conclude he won't be put on FPC now, Senate sources say.

•

Don't expect any dramatic results from Kennedy's criticism of mid-winter hikes in No. 2 fuel oil prices. Interior and Justice Dept. inquiries are continuing, without any deadline for reaching conclusions. Contrary to early reports, the Federal Trade Commission isn't involved in the investigation. Without evidence of price fixing, there's little the government agencies can do, and several agency aides are already convinced the increases were merely seasonal.

•

Oil industry help in attracting foreign travelers to the U.S. will be sought. Sen. Warren G. Magnuson (D., Wash.) wants a travel office in the Commerce Dept., in line with the idea of promoting tourism as a means of cutting the U.S. balance-of-payments deficit. Such an office might supply foreign-language highway maps. But aides say oil companies should consider printing them, too, and also consider promoting travel in the U.S.

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Wilmington Subsidence Is Ending

Waterflooding has nearly licked the subsidence problem in California's Wilmington oil field, the second largest in production in the U.S.

That's the opinion of M. D. Hughes, director of petroleum and subsidence control operations of the Port of Long Beach, who says that subsidence has been stopped, "for all practical purposes."

And he adds, "Based on performance to date, we believe that subsidence will be almost entirely arrested by July 1, 1962."

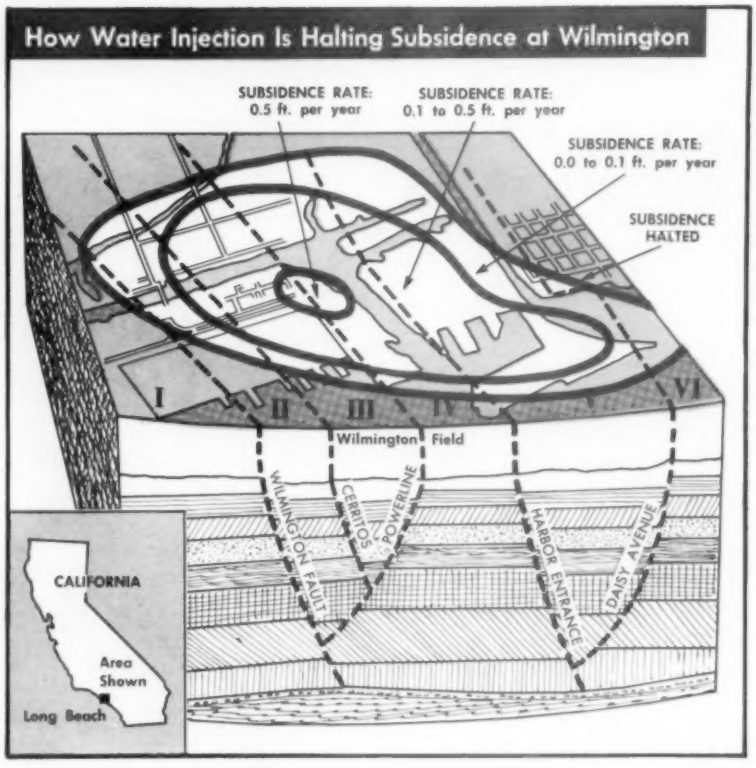
The program has been so successful that, in the critical area of the Navy shipyard, the land has been lifted as much as 3 in. at some Navy bench marks.

Some of the Long Beach city bench marks also show that the land has risen somewhat, Hughes says.

Subsidence has been stopped in approximately 85% of the Navy shipyard, 50% of the Pier A area and along Anaheim St. on the north flank of the field. It has slowed down materially in other areas.

The maximum sinking rate is now slightly less than 0.5 ft. per year at the worst point (map). This compares to a high of 2.4 ft. a year in 1951. If it weren't for the repressurization program, Hughes says, the rate would be up to 0.8 ft. a year. Total subsidence is now over 27 ft. at the worst point, near the Southern California Edison plant.

WATER INJECTION WELLS are now pumping in some 400,000 b/d of water.



Added punch has been given to the subsidence program with the signing this month of a unit operating agreement for Fault Blocks II and III.

The agreement marks the first time in the history of California that tidelands have been included in unit plans. It also commits the city-controlled tideland oil property to units already formed by major private upland operators.

Repressuring operations in the past have been conducted under cooperative agreements between the two.

City participation in the Fault Blocks II and III units was delayed almost a year pending legal clarification. But the California Supreme Court, as a result of a mandamus action to test the validity of the unit agreements, upheld in January the constitutionality of merging public trust lands with private holdings in a single unit.

At present, Fault Block II is under full flood in all but the Union Pacific, Ford, and 237 zones; Block III is under flood in all zones.

Companies working jointly with the city in the unitization of these two blocks include: Mobil Oil Co., Union Pacific R.R. Co., Los Angeles & Salt Lake R.R. Co., Southern California Edison Co., and Ford Motor Co. The city of Los Angeles is also involved.

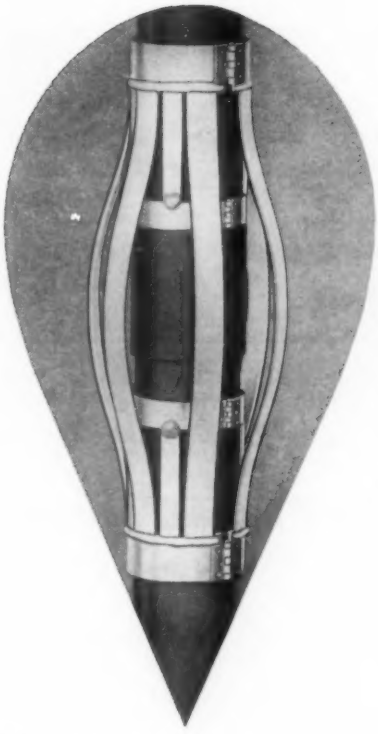
Another major hurdle will be cleared with completion of unit agreements for Fault Block IV.

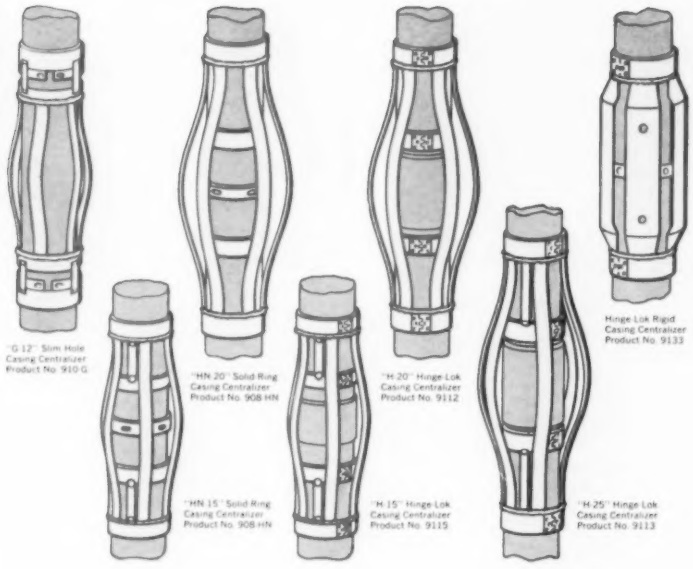
Hughes estimates that unitization there will become effective by June 1. This will leave only the Ranger zone in Fault Block V; it is expected that this zone will be unitized by Dec. 31.

Block IV is expected to be under full-scale flood by the latter part of this year; Block V is under flood in all but the Tar and Ranger zones; and Block VI is under flood in all zones. (Block I is outside the critical subsidence area.)

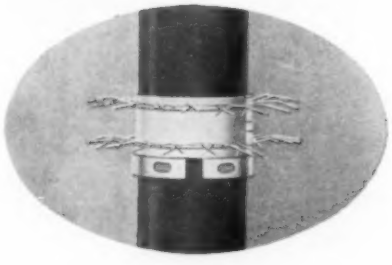
The water-injection operation, meanwhile, continues to expand. Latest action: The Long Beach Harbor Dept. has announced a program to drill 26 more injection wells in the field.

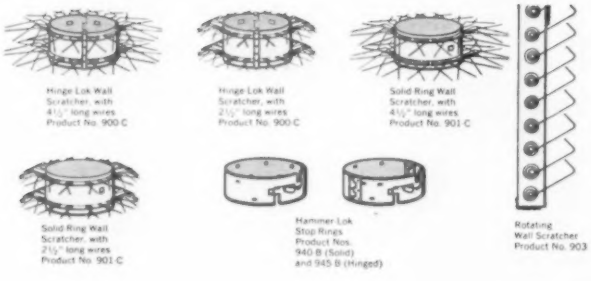
The new wells are part of a $3¼-million program for the expansion of the water-injection system serving the tidelands. The program also calls for




"G-12" Slim Hole Casing Centralizer Product No. 910 G
"HN-20" Solid-Ring Casing Centralizer Product No. 908 HN
"H-20" Hinge-Lok Casing Centralizer Product No. 9112
Hinge-Lok Rigid Casing Centralizer Product No. 9133
"HN-15" Solid-Ring Casing Centralizer Product No. 908 HN
"H-15" Hinge-Lok Casing Centralizer Product No. 9115
"H-25" Hinge-Lok Casing Centralizer Product No. 9113

A good cement job starts with two things




Hinge-Lok Wall Scratcher, with 4½" long wires Product No. 900-C
Hinge-Lok Wall Scratcher, with 2½" long wires Product No. 900-C
Solid-Ring Wall Scratcher, with 4½" long wires Product No. 901-C
Solid-Ring Wall Scratcher, with 2½" long wires Product No. 901-C
Hammer-Lok Stop Rings Product Nos. 940-B (Solid) and 945-B (Hinged)
Rotating Wall Scratcher Product No. 903

A good primary cementing job starts with centered casing and a good bonding surface. The only centralizers and scratchers good enough for this important job are the best ones you can get. That's where Baker comes in...

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BAKER SCRATCHERS glide down the hole without disturbing the mud cake; and when activated in the cementing area they dig in and remove the mud cake ensuring a good bonding surface. Baker Reciprocating Scratchers come with either long or short wires, in Hinge-Lok or Solid-Ring types. Baker Rotating Scratchers come in five-foot sections, and feature "plow angle" scratcher wires that are effective regardless of annular clearances.

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the conversion of 103 producing oil wells to water injection wells, and the construction of a water distribution system to serve the new wells.

The wells are expected to boost the amount of water being injected by approximately 105,000 b/d. The wells will serve Fault Blocks II, III, IV, V, and VI.

As of late October, 1959, there were 86 injection wells in the field. There are now 141 wells, which are injecting some 400,000 b/d of water. The rate is expected to be boosted to 600,000 b/d by the end of 1961. More than 300-million bbl. of water have been injected into the field over the past 30 months.

The water injection capacity is slated to reach 1-million b/d when the over-all project is completed.

In addition to halting subsidence, the waterflood program is proving to be a highly profitable operation: Estimates of recoverable oil in the field are climbing sharply.

"In the relatively short period of 2½ years since the pilot projects were expanded into full-scale operation," Hughes says, "the field has produced approximately 10.5-million bbl. of waterflood oil. This includes 7.5-million bbl. of oil from the Long Beach tidelands. The field's current production rate has been increased above normal primary by approximately 15,000 b/d. Most of the increase has been in the tidelands area, where production has increased in excess of 10,000 b/d."

He adds: "It is estimated that the Wilmington field will have a peak production rate of approximately 105,000 b/d under full-scale water injection. This represents an increase of approximately 50,000 b/d of oil over the normal primary production rate."

Recoverable oil estimates have jumped from a little over 1-billion bbl. to nearly 1.5-billion bbl. in the developed portion of the field, according to Hughes.

"Under a water-injection plan proposed for the development of city tidelands east of Pine Ave., oil reserves are estimated at 635-million to 865-million bbl., an increase of approximately 300-million to 425-million bbl. over normal primary," Hughes says.

The project east of Pine Ave. is being prepared by the Long Beach Harbor Dept. Plans also provide for development of the area from specially designed and landscaped islands that "will add to the beauty of the offshore area."

The 6,800-acre field has seven roughly horizontal zones of oil sands, separated by shelves of almost impermeable shale.

PRINCETON OIL AND GAS FIELD (right), opened last year in southwest Ontario, is the first to produce from a (Cambrian) sand in the province. This success is one reason why . . .

Operators Look for Deeper

The year-old Princeton (Basal Quartz) oil and gas field in Oxford County, Ontario, has triggered new interest in the deeper Cambrian and Ordovician formations in that province.

The field, opened in February, 1960, is considered the top discovery of the year for Ontario.

To date, four oil wells and five gas wells have been completed in the field, located in the Princeton-Gobles area. Drilling of another hole is under way, and more are planned.

The oil production in the field is the first from a sand in the province.

Most production in Ontario is from the Salina, Guelph, Clinton, and Medina, all Silurian limestones.

The Basal Quartz (upper Cambrian) is below the Trenton (Ordovician) and rests on a pre-Cambrian surface. It was found at 2,900 ft. at Princeton. Shallow gas has been produced in the area, however, for some 50 years.

Water has been found in the Basal sands elsewhere in Ontario, but none of the Princeton wells encountered water.

Some indication of the growing interest in the Cambrian and Ordovician formations is seen in the fact that the number of tests drilled to these formations increased from 19 in 1959 to 57 last year.

Gas production was found first at Princeton. The first oil well was brought in three months later, in the same Cambrian formation.

The initial gas discovery was made by Paris Petroleums in Blenheim township in February, 1960. The well was completed for 1-million cf/d of gas on open flow.

Since then, Paris has drilled six more holes, of which four were completed as gas wells and two were dry. Production from the four wells has averaged approximately 1.2-million cf/d.

The five gas wells are capped, pending completion of a gathering system to connect with the Union Gas Co. of Canada line, which runs just south of the field.

Mercury Chipman Co., Ltd., and B. McMaster & Sons, Ltd., opened oil production in the field with its No. 1 test, some 1,800 ft. southwest of the Paris No. 1. The well was completed for 50 b/d of 39-gravity oil and 500,000 cf/d of gas after fracturing. Production is from 6 ft. of pay at 2,880 ft.

The No. 2, drilled 1,800 ft. southwest of the Mercury No. 1, encountered 22 ft. of pay. This well, however, is an erratic producer, some days yielding 25 b/d, and on other days as much as 100 b/d.

The No. 3 and No. 4 wells were completed for 100 b/d each. All of the Mercury wells are on the pump except No. 1, which is being dually produced. Oil is trucked to the Imperial Oil Ltd. refinery at Sarnia.

Estimates of the oil reserves range from 2.6-million bbl. to 6-million bbl., based on an area of roughly 1,600 acres.

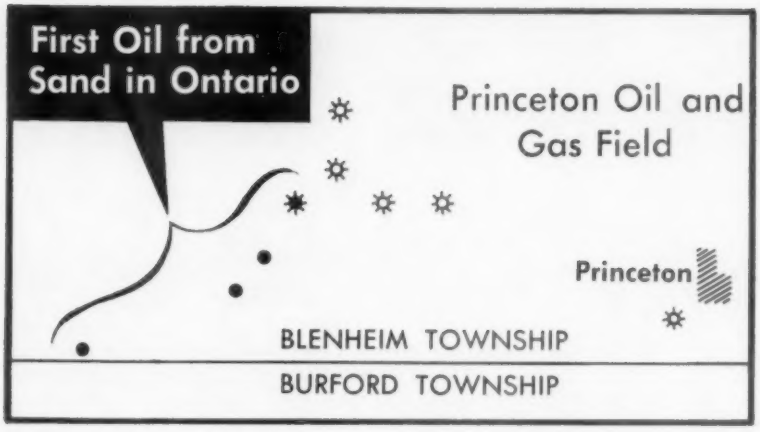
A lease rush developed after the oil discovery at Princeton, and most of the land in the area is now under lease.

Midwest Oil Co., Kansas, reportedly picked up some 40,000 acres, but had sought more.

Imperial also has some acreage in the vicinity, and is reportedly ready to begin work on it soon.

There are additional incentives for exploratory activity in the area.

For one thing, Ontario is the biggest market in Canada, and imports



Production in Ontario

some 11,000 b/d of crude and 70,000 b/d of products.

Furthermore, there is no proration of production in the province.

Indications are that onshore exploration elsewhere throughout southern Ontario will continue at a good pace this year.

Currently, 11 companies are drilling in the province. As of last report, 20 rigs were active on development holes, and 12 on wildcats.

There were 306 holes drilled in the province last year, of which 267 were onshore and 39 offshore. The offshore total was down sharply from the 75 drilled in 1959. But the onshore total was up from 235 in 1959.

In addition to the Basal Quartz play in Oxford County, there were several tests drilled south of Rodney in Elgin County to investigate the Trenton and the Basal Quartz. Gas and oil shows were reported, but not in commercial quantity.

Imperial, in association with Harvest Petroleum and Camerina Petroleum (formerly Submarine Oil & Gas), drilled 11 development and two exploratory holes in Colchester South township to further outline the Colchester South oil pool.

In Halton County, Anthony Petroleum drilled four development wells last year in Trafalgar township into the Black River (Ordovician) formation, following discovery of the pool in 1959. While there has been increasing attention directed toward the Cambrian and Ordovician formations, the Silurian is still likely to draw the major drilling emphasis this year.

Offshore drilling at the east end of Lake Erie during 1960 extended the Clinton-Medina gas producing area of the Haldimand gas field from onshore to offshore (see below).

At the west end of the lake, the gas producing Salina and Guelph formations in the offshore portion of Tilbury field were extended by development drilling.

Further gas reserves were added onshore in the Clinton and Medina formations.

Still, the number of holes drilled to formations of Silurian age dropped from 223 in 1959 to 150 in 1960.

Drilling to the Devonian was up last year over the 1959 total, due mainly to the secondary recovery program launched in the Glencoe pool.

Allegany Producing Corp. drilled 29 water-injection wells alone in this old Ontario field, which was opened more than 50 years ago.

No significant discoveries in the Devonian were made last year, but it's expected that this age will be important in future secondary recovery programs.

Ontario legislature studies . . .

Rules to Boost Great Lakes Drilling

New rules that may permit more extensive drilling in the Canadian portion of the lower Great Lakes are expected soon from the Ontario legislature, now meeting in Toronto.

Drilling on Lake Huron and Lake St. Clair was halted early last year, and extensions of drilling activity on Lake Erie were held up, pending an overhaul of government regulations.

Prohibition of drilling was sparked by complaints from individuals and organizations, on both sides of the international border, that the operations contributed to water pollution.

A government official said that a completely rewritten and "clearcut Ontario policy on offshore drilling" will be issued "well before the 1961 drilling season starts."

This commitment came from S. W. Clarkson, deputy minister of the Ontario Dept. of Energy Resources. He said the new policy and the new regulations will be determined largely by the findings of a Select Committee on Oil & Gas Resources.

The committee, headed by Dr. G. B. Langford, of the University of Toronto, held hearings last summer and last fall.

The studies were completed in January. Dr. Langford's final report, including recommendations, is expected to be turned over to the provincial government any day now.

Companies with big stakes in the offshore projects vigorously contested charges that the operations were causing pollution of the waters.

These companies were Consolidated West Petroleum Ltd., Place Oil & Gas Co., Bluewater Oil & Gas Ltd., Long Point Gas & Oil Ltd., Submarine Oil & Gas Ltd., Imperial Oil Ltd., and Radar Exploration Co.

Each submitted briefs and other data challenging the contentions that oil patches on the lake shores came from drilling and gathering operations.

Since its formation a year ago, the Langford committee has compiled much data on drilling operations, and even junketed to the U.S. Gulf and California to talk to offshore operators.

Submission of the committee's main report had been planned originally for December or January, but it was delayed so members could incorporate additional information.

Meanwhile, there has been no letup this winter in the pace of oil and gas exploration throughout southern Ontario.

Early indications are that this year probably will be better than 1960.

Electrohydraulic Drill Crushes Rocks

Drilling contractors may some day benefit from experiments being made in the U.S. and in the Soviet Union with an "electrohydraulic" method of rock pulverization. But its development is beset by technical difficulties.

B. H. Bergstrom, of Allis-Chalmers Mfg. Corp.'s research division, reported on recent American and Soviet electrohydraulic research in a recent issue of Engineering & Mining Journal, a McGraw-Hill publication. His article was based on Allis Chalmers' experience, and on data taken from the Russian magazine, "U.S.S.R."

Bergstrom says that, to his knowledge, the only non-Soviet experiments in electrohydraulic "comminution"—or fragmentation—have been conducted since 1952 by his company.

How does the method work? Simply stated, impact and cavitation forces are created, and may be harnessed to do work, when an electric spark is generated within a liquid (PW—Jun.5'59,p24).

The initial impact is the result of liquid compression caused by the spark's explosive "gapping." The cavitation force is an opposite, or "implosive," reaction caused when displaced liquid rushes back into the void momentarily "forced" by the spark.

Bergstrom cites Soviet claims that the sparking action creates high pressures—up to several hundred atmospheres—which can break up and pulverize rock in the vicinity of the spark.

A small Soviet rock drill pilot model has demonstrated high penetration rates in various types of rock.

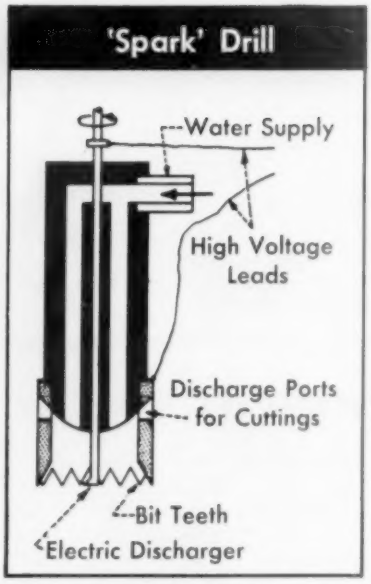
Drilling speeds of 0.8 in. per minute were reported for granite; 3 in. per minute for iron ore; and 20 in. per minute in concrete.

The drill's basic components are: (1) a low-power step-up transformer (to 25 kv.); (2) a high-voltage rectifier tube; (3) a bank of 0.2-mfd.-capacity condensers; (4) a sphere gap for control; (5) an underwater discharge (electrode-to-drill tooth) gap; and (6) a liquid sparking environment.

Voltage from the transformers is rectified and stored in the condensers. When the voltage is built up enough to break down gap resistances, the condensers discharge their potential across the gaps, and sparking occurs.

However, the Soviets report that recurring problems of short component life have plagued their efforts to refine the apparatus for practical work.

Bergstrom estimates, from data given in the Soviet magazine, that the drill has a very low efficiency rating in most drilling media. He also says the Russians have experienced difficulties stemming from high voltages.



ROTATING DISCHARGER shoots 'sparks' to teeth. Action pulverizes rock.

Condensers and electrode insulation have repeatedly burned up after only short periods of operation. Also, the underwater electrode tips have quickly become eroded.

Other major limitations listed are that the power source must be located close to the underwater discharge point, and that a large part of the discharged electrical energy is wasted in decomposing water into oxygen and hydrogen, leaving little useful force for comminution.

Allis-Chalmers Mfg. Corp. has run a series of basic experiments with electrohydraulic equipment up to 80,000 volts, but so far has found the method inefficient.

"The best performance obtained at Allis-Chalmers," Bergstrom reports, "was at an energy expenditure at least ten times as great as with conventional crushers. Allied problems, such as the short life of the electrical components, as reported in the Soviet literature, and the inherent danger of high voltages, seem to indicate that this type of apparatus will have only a limited field of application."

How to Cut Cable Tool Costs

Cable tool drilling costs can be trimmed, but it takes a sharp eye and a firm hand to do it, according to B. J. Shafer, of Shafer Drilling Co.

Shafer, of Wooster, O., checked off eight areas on which contractors can cut costs, in an address before the winter meeting of the Ohio Oil & Gas Assn. in Columbus earlier this month.

Drilling costs for both cable tools and rotary rigs have been rising steadily through the years (page 8).

Operational costs that can be tightened are those of labor, supervision, maintenance, fuel, cordage overhead and administration, tool replacement and repair, and insurance, Shafer says.

He commented that tool replacement and repair are major expense items, particularly where fishing jobs are concerned. But he added, "proper use of stem joints, care of wire cable, and proper drilling techniques can avoid a majority of fishing jobs."

He stressed that suitable safety programs, such as those that are practiced in the Southwest, could result in lower insurance rates.

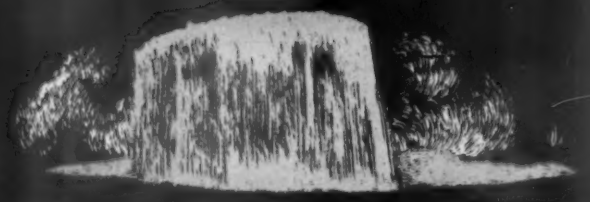
It was also suggested that cable tool manufacturers could be more helpful by working with contractors on equipment design.

"It would appear," says Shafer, "that there would be a greater demand for cable tool equipment if the manufacturer would have a representative spend a period of time interviewing contractors to determine their needs and contributions to the design of a drilling machine suited to the field man.

"Furthermore, it is noted that this area is without the services of a staff of trained mechanics employed by the manufacturers to call in the event of equipment breakdown. As a result, the driller, the toolpusher, or the local mechanic must be able to repair with the usual collection of tools any equipment that fails."

Shafer also mentioned that equipment capable of drilling to depths of 3,000 ft. to 4,000 ft. "should have a central lubricating system." And, he added, "experience has shown that storage capacities of the bull reel and sand reel are not in line with the rated capacity of the machine."

VISQUEEZ slurry shuts off water where all other methods fail!



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An exclusive BJ Service development, Visqueez is the most effective method yet devised to shut off water from producing oil or gas wells. Only Visqueez slurry *thins* on contact with water... penetrating and depositing cement deep into the most troublesome water-bearing formations. A special viscous carrying agent puts a protective coating around the cement particles. The slurry cannot set up until a *pre-timed* chemical action removes the oil coating. No high squeeze pressures... no need for reverse circulation or costly drilling out—excess slurry is recovered as free-flowing oil and cement. With BJ Service Visqueez, the well is back on production in 24 hours or less!

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Visqueez Increases Oil Production 30%—Decreases Water Production 27%

PROBLEM: To lower the water/oil ratio of the producing wells in a water-flood system in Wyoming. SOLUTION: Visqueez was used to treat 16 producing wells with an aggregate production of 10,883 BWPD and 897 BOPD. Following Visqueez treatments, water production has decreased to 7,983 BPD and oil production has increased to 1,169 BPD. Over-all results: water production down 27%—net oil production *up* 30%.

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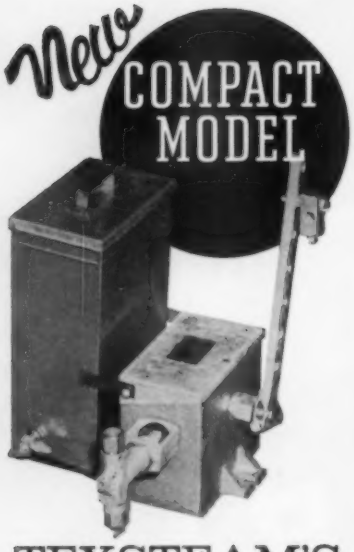

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CHEMICAL
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THE SINGLE-HEAD INJECTOR FOR HIGH CONCENTRATE CHEMICALS REQUIRING SMALLER RESERVOIRS

Texsteam's new 1200 EC chemical injector — like its big brother (Series 1200) — has been designed specifically for beam pumped wells. It operates by direct connection to the walking beam. Having all the performance characteristics of larger more costly models, the 1200 EC is the economy way for injection of emulsion and corrosion inhibitors. Equipped with a two-gallon, stainless steel reservoir, the assembly is easily attached to foundation. Strict control over injected volume is assured by a choice of four adjustments.

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What's New / IN PRODUCTION

Wyoming's Patrick Draw Production Cut 30%

Oil production at Patrick Draw field, Sweetwater County, Wyo., has been cut 30% on order of the state Oil and Gas Conservation Commission, pending a hearing Mar. 20.

State Minerals Supervisor E. A. Swedenborg said the commission acted last week to reduce the loss of natural gas being flared at the field, estimated at 25 million cf/d (PW—Jan.27'61,p17).

Eight producers in the area, including two who are building gas processing plants, have filed protests to the cut.

Union Pacific Railroad Co. expects to have a $3-million gasoline extraction plant, capable of processing 27-million cf/d of gas, completed by mid-July. Colorado Oil & Gas Co. is building a smaller plant, expected to be completed in June.

Earlier, the commission said it was considering a shutdown of the entire area if no solution was reached.

Production before the cutback averaged approximately 25,000 b/d from more than 100 wells. Gas-oil ratio in the field is roughly 850:1.

•

Aneth Pressures Down

Ultimate oil production in the Greater Aneth area, San Juan County, Utah, may decrease significantly unless secondary recovery is started.

Engineers report reservoir pressure in one of two major areas has dropped to 746 psi. Core Laboratories, Inc., on assignment from the Utah Oil & Gas Conservation Commission, said a drop in reservoir pressure below 1,050 psi. would result in a loss of oil unless waterflooding was started.

The other area surveyed showed pressure at 1,150 psi.

Oil in place is estimated at more than 900-million bbl.

•

The Alaska Division of Lands has put up the entire 155,000-acre former Tyonek bomb range for lease nominations.

Following a 30-day nomination period and a 15-day evaluation period, tracts will be offered for competitive bidding, with tentative sale date set for May 15.

The Tyonek sale will replace a scheduled lease sale in July.

•

Advance forces for the largest field study ever undertaken by the Canadian government are starting a project to map the oil, gas, and mineral resources of the polar continental shelf.

The first members of a 70-man scientific expedition are establishing a base at Isachsen, Ellef Ringnes Island, situated on the rim of the polar basin.

Field work in the initial stages will be conducted within a 15-mile radius of the base.

Expedition members include oceanographers, hydrographers, topographers, geologists, geographers, and geophysicists.

An airlift will carry in the expedition's 700 tons of supplies.

•

The Utah Oil and Gas Conservation Commission has agreed to 80-acre spacing at Anido Creek pool, San Juan County.

The Mar. 7 ruling covered 72 locations in nine sections proposed by the Champlin Oil & Refining Co. and Murphy Corp.

Further hearings will be required if operators seek dual completions in the Desert Creek and Ismay formations, or if they seek twinning of wells.

•

Total successful bids at a sale of oil and gas leases have set a Nebraska record of $93,520.

The average per-acre bonus bid for the 17,400 acres was $5.36. All but one of 31 tracts offered at the Mar. 3 sale were leased.

Pan American Petroleum Corp. paid the highest per-acre bonus, $16, for a full section of Furnas County land in 16-3n-25w.

•

Tradewinds Exploration, Inc., Tulsa, is combining all drilling operations into a new wholly owned subsidiary called Tradewinds Drilling Co.

The action combines two former Tradewinds subsidiaries, Roden &

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Litho in U.S.A.

McRae Drilling Co. and Warren-Bradshaw Drilling Co., both of which have been active in the Mid-Continent and Rocky Mountain areas for the past quarter-century.

Bryce Crider, vice-president, says the move will consolidate the activities of the two subsidiaries. The new company, to be headquartered in Tulsa, will operate 16 rotary rigs in the same areas.

•

Humble Oil & Refining Co. is negotiating with West Central Drilling Co. for acquisition of the latter's producing properties in the Abilene (Tex.) area.

Some 600 b/d of net oil is involved. West Central Drilling, which has annual production amounting to 700,000 bbl. in West Texas, also operates waterflood projects in four counties.

•

Three Kansans have purchased Mutual Oil Co., Inc., from Ralph O. Keys and associates.

The three, Willis D. Waterman, Robert A. Price, and Ken Mattson, will continue operations of the company in oil development, production, leasing, and management.

The company is headquartered in Salina, Kan.

•

Coastal Production Co. has been formed as a wholly owned subsidiary of the Houston Corp., St. Petersburg, Fla., for the purpose of participating in exploration and production.

W. J. Bowen, president of Houston, says that, initially, Coastal's activities will probably be conducted primarily along the Gulf Coast area of Texas and Louisiana, along the route of the natural gas pipelines operated by the company's subsidiaries, Coastal Transmission Corp. and Houston Texas Gas & Oil Corp.

•

Lone Star Gas Co., Dallas, will build nine dehydration plants in Texas and Oklahoma.

The plants will remove moisture from natural gas prior to its discharge into the firm's transmission system. Largest of the plants, which will cost a total of $750,000, will be at Gordon, Palo Pinto County, and at Springtown, Parker County; each of these will be capable of handling 100-million cf/d of gas. One plant has already been completed in Hamilton County, and others are planned for Smith, Grayson, King, and Brazos

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The electrical wiring system has been improved for greater reliability. Chassis wiring is fastened within the protection of the frame web, away from mud, ice and snow. Ford Truck frames have been engineered to make the mounting of bodies and special equipment easier. And a new 212-inch wheelbase model is available to accommodate extra-long bodies.

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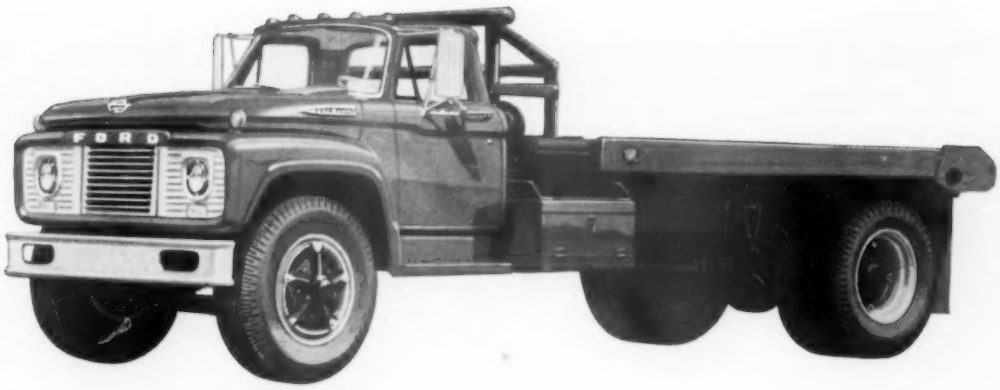

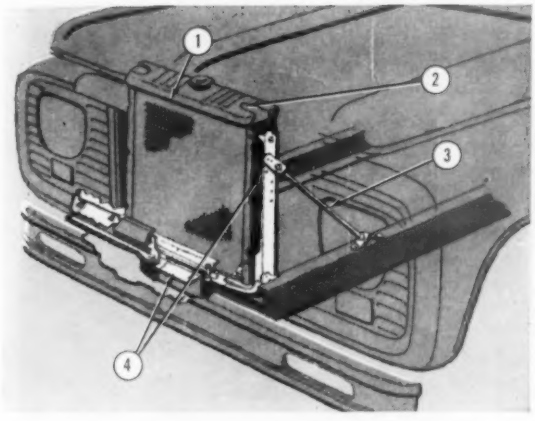

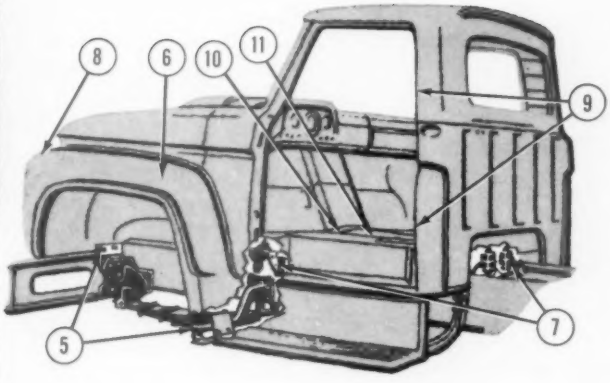

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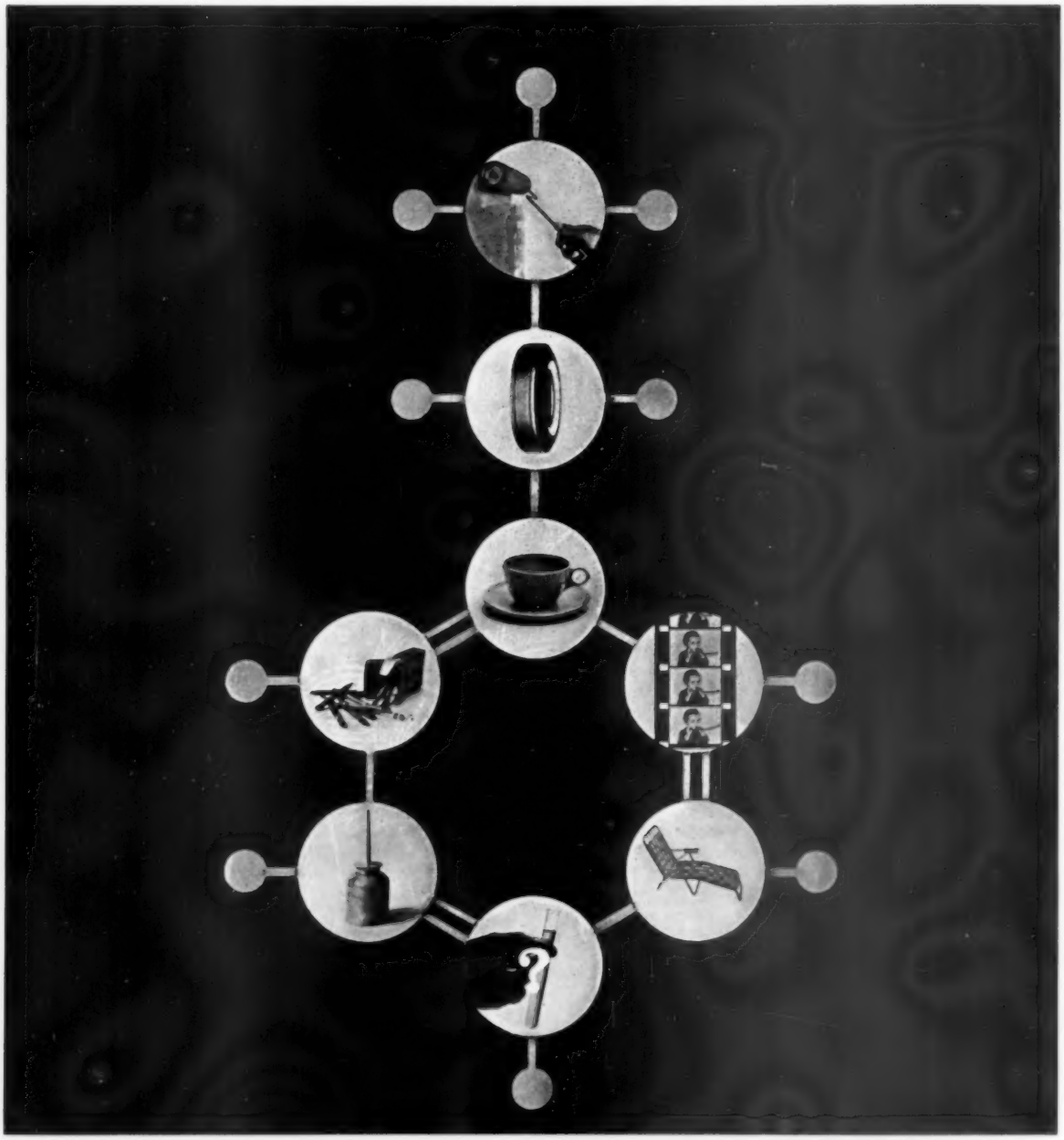

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Drilling Highlights

West Central Texas—Cities Service Petroleum Co. No. 1-B Allen, Isaac Eaves survey, A-165, Hood County, recovered 45 ft. of 42-gravity oil and 178 ft. of very heavily oil- and gas-cut mud on 65-minute test of the Ellenburger at 5,157-71 ft. Gas flow was estimated at 128,000 cu. ft. after 7 minutes, declining to 12,000 cu. ft. at the end of the test. Recoveries of oil and gas also were made on tests at 5,169-82 ft., and 5,200-316 ft. The prospect is 4 mi. south of a conglomerate producer in Parker County. There is no current oil production in Hood County.

Oklahoma—Gulf Oil Corp. et al No. 1 Wood, section 29-6n-8w, Grady County, flowed 9.6 bbl. of 47-gravity oil per hour and 6,050,000 cf/d of gas on 4-hour test of the Springer through 13/64-in. choke and a series of perforations between 16,232-376 ft. It is the state's second-deepest pool. The well is 2½ mi. northeast of Cement pool.

In Custer County, Mobil Oil Co. No. 1 Horton, section 14-15n-15w, flowed 7 bbl. of 44.1-gravity oil per hour on 5-hour test through 1-in. choke and perforations at 9,722-78 ft. in the Oswego. The venture, 5½ mi. east of North Custer City field, previously found gas-condensate production in the Meramec at 13,192-215 ft. and 13,300-60 ft. There is no current oil production in the county.

Nebraska—Exeter Drilling Co. No. 1 Palmer, section 17-2n-25w, Furnas County, recovered 370 ft. of 33-gravity oil, and 120 ft. of oil-cut mud on 1-hour drillstem test at 3,366-445 ft. in an interval identified as within the basal Pennsylvanian. The wildcat is situated more than 7 mi. to the east of Silver Creek, and if completed will become the first producer in Furnas county.

East Texas—Fairway Operating Co. No. 1 A. J. Wilkerson, Jose Cherino survey, Anderson County, was dually completed for 150 b/d of 40.8-gravity oil through 10/64-in. choke and perforations at 9,435-51 ft. in the Bacon lime, a new pay for the area, and for 216 b/d of 47.7-gravity oil through 1/64-in. choke and perforations at 10,111-25 ft. The well is 1 mi. southwest of production in the Fairway James lime pool.

Wyoming—Champlin Oil & Refining Co. No. 1 Shell-Schurict, section 6-50n-67w, Crook County, 3¼ mi. southeast of the company's Prong Creek Minnelusa discovery, recovered 273 ft. of mud, 546 ft. of oil-cut mud, 2,012 ft. of 19.6-gravity oil, and 627 ft. of heavily oil-cut mud on 1-hour test of the Minnelusa at a depth of 6,285-94 ft.

Southwest Texas—Gulf Oil Corp. No. 1 Hector Vela, T&NO survey 5, A-100, Zapata County, was completed for 12.2-million cf/d of gas on open flow through perforations at 13,272-82 ft. in the Wilcox. The well is 8 mi. southwest of deep production in Northeast Thompsonville field in Jim Hogg County.

Richfield Makes Underwater Completion Off California

Richfield Oil Corp. (L.A.) has succeeded in making the first underwater completion off California.

The well was completed in 55 ft. of water on Richfield's 1,175-acre state lease on Rincon Point, between Ventura and Santa Barbara. The well is located ¾ mi. offshore, and some 3,000 ft. west and 450 ft. north of the company's man-made drilling island on the same lease.

Production of 75 b/d of 29-gravity oil flows to the island through an extra-heavy 2-in. pipe laid on the ocean bottom. Two other 2-in. steel pipelines are bundled with the production line, one being a control line that enables the operator to shut off the well from the island, and the other being a line for use of gas lift, if this becomes necessary.

The company used the same specially designed wellhead and techniques it developed and used last summer off the Peruvian coast to make the first known ocean floor completion (PW—Aug.26'60, p20).

The wellhead is encased in a steel housing. Divers were used to make the final connections.

Several steps have been taken to guard against leakage. One is the use of double seals in all cases. A fail-safe valve on the wellhead is designed to close automatically unless held open by hydraulic pressure on the control line. Pressure is cut off immediately if any irregularities occur.

Also, if the flow line is cut, pressure in the hydraulic line will be relieved automatically and the valve will close. In addition, a storm choke is placed in the tubing string; it closes automatically on a pressure drop.

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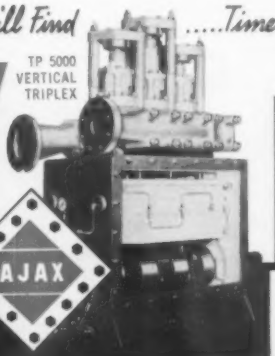

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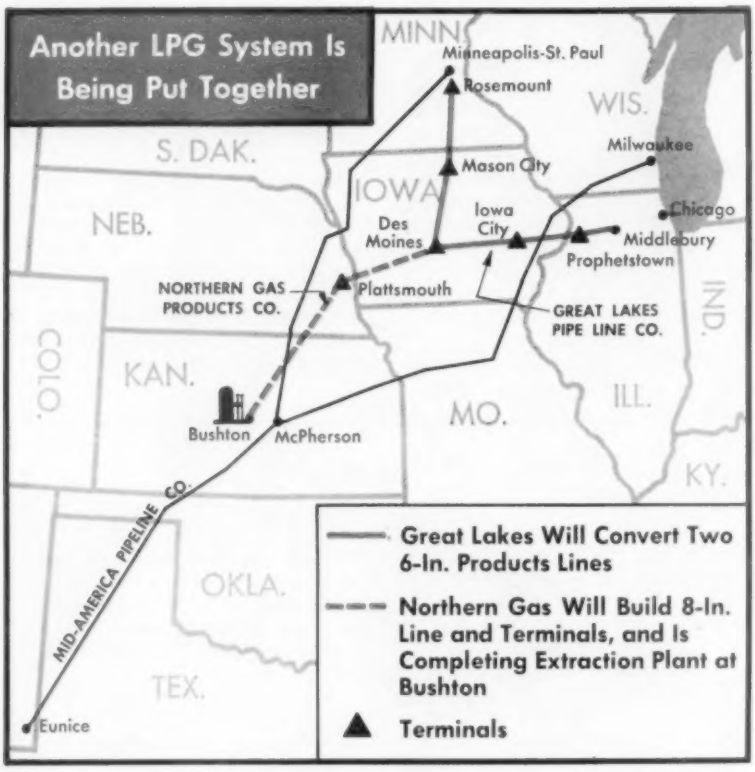


Midwest LPG Market Lures Two More Pipeline Firms

A new pipeline system is being created to move LPG into the Plains Area and the Upper Midwest, now being served by the 2,200-mi. pipeline of Mid-America Pipeline Co.

The Mid-America system, which originates at Eunice, N.M., and forks to Minneapolis-St. Paul and Milwaukee, was put in operation in December (PW—Dec.16'60,p52).

Initial capacity of the line was 50,000 b/d, which was expected to be boosted to over 85,000 b/d.

Throughput during January and February averaged 26,050 b/d, which consisted only of propane. But plans are now being made to move butanes and natural gasoline.

The companies involved in the new project are Northern Gas Products Co., a newly formed subsidiary of Northern Natural Gas Co., and Great Lakes Pipe Line Co.

Northern Natural owns thousands of miles of natural gas pipeline, which extend from Texas into the Upper Midwest; Great Lakes operates a vast network of products lines in the Midcontinent area.

Northern Gas will build an 8-in. line from Bushton, Kan.—where it is now erecting a gas liquids extraction plant—to Des Moines. Great Lakes will convert two existing products lines out of Des Moines to LPG service (map).

No construction schedule has been set yet either for the new line or for the conversion. A source at one of the companies indicates, however, that the project might be finished before the end of the year.

Cost of the 350-mi. Northern Gas line, together with terminal facilities, will be $12-million. No cost figure has been given for the conversion of the products lines.

Northern Gas's line will be designed for an ultimate capacity of 40,000 b/d, and the two Great Lakes 6-in. lines for an ultimate capacity of 14,000 b/d each.

When full capacities of the lines is expected to be reached has not been disclosed. Nor is it known yet what initial throughput will be.

Both propane and butane will be shipped, presumably, but it has not been determined by the companies in what proportions. According to a spokesman, a decision as to the quantity of each to be carried depends on the outcome of studies of the requirements for each in the market area.

At the start of operations, all of the LPG that will be carried by the system will come from the Bushton extraction plant, which is scheduled for completion in the fall.

The plant will be capable of processing 900-million cf/d of natural gas.

Asked whether shippers besides Northern Gas would use the lines, a spokesman replied, "There are no plans—at least not at present."

Terminals will be built by Northern Gas on its line at Bushton, and near Plattsmouth, Neb.; at the junction of the lines at Des Moines; and on the Great Lakes lines near Mason City and Iowa City, Iowa; Rosemount, Minn.; and Prophetstown, Ill.

While Rosemount—the northernmost terminal—is just south of Minneapolis-St. Paul, a source says there are no plans at present to use the terminal to market LPG in the Twin Cities.

"But there might be later," he adds.

In some cases, the Northern Gas-Great Lakes depots will be situated very near those of Mid-America.

Mid-America has a terminal at McPherson, near Bushton; near Omaha, just north of Plattsmouth; at Ottumwa, due south of Iowa City; and at the Twin Cities.

P. A. Gass, Northern Gas president, says the system "will provide a reliable source of liquefied petroleum gas for many communities not now served by an LPG line."

He envisages an expanding market for LPG "in rural areas and metropolitan fringe areas."

Gass hopes to supply petrochemical markets through the pipeline system.

One such market could spring up in the 'Quad-Cities' area (which consists of Moline, East Moline, and Rock Island, Ill., and Davenport, Iowa).

Iowa-Illinois Gas & Electric Co. recently proposed that the area be used as the site for an industrial complex, which would include petrochemical plants.

Compressor Lube Substitute Is Found

Rings and packing impregnated with molybdenum disulfide are being used by Arkansas Louisiana Gas Co. instead of oil to lubricate several of its compressors, with a resultant reduction in cylinder wear.

Results of five years of operation with the molybdenum disulfide were described as "exceedingly good" by P. J. Chandler, superintendent of compressor stations, at this week's meeting of the Natural Gasoline Assn. of America in Dallas.

Mainline compressors in which the rings and packing are being used include angel-type, direct-driven units with capacities ranging from 330 hp. to 1,500 hp.

They are also being successfully employed in a variety of field compressors. These include skid-mounted, belt-driven units in a range of 30 hp. to 350 hp., and skid-mounted, direct-driven angle compressors with ratings of from 150 hp. to 750 hp.

Nearly all of these field units are operated unattended.

The body of the rings and packing consists of Micarta, a phenolic treated cloth laminate, which has first been impregnated with the molybdenum disulfide. Micarta is made by the Micarta division of Westinghouse Electric Co.

Arkansas Louisiana turned to the use of molybdenum disulfide in conjunction with Micarta after it had first tried the molybdenum disulfide alone in liquid form in compressor lubricators. One cylinder was equipped with the "Moly Micarta" rings, as the company calls them, and the cylinder showed less wear than did those that had been lubricated with the liquid molybdenum disulfide.

The chemical is a laminar-type solid in the physical state, similar in structure to graphite. Its molecules tend to stack up in layers, and, under pressure and movement, slide over each other due to the high lubricity of the sulfur.

In addition to its high lubricity, molybdenum disulfide can be impregnated in several materials.

At one station, cylinders outfitted with the rings averaged .0005 in. of wear after 10,000 hours of operation, as compared with .003 in. of wear in cylinders that had been conventionally lubricated.

In another test, a new field compressor was outfitted with the Micarta impregnated with molybdenum disulfide and, after 8,000 hours of operation, showed only .0015 in. of wear.

Arkansas Louisiana lists other advantages in using the molybdenum disulfide-Micarta rings and packing. Among them:

- Use of oil lubricants can result in oil contamination of downstream dehydrator beds and of the pipeline.
- The rings and packing eliminate the need for lubricators, as well as the cost and the handling of the lubricating oil.

The company says that "excessive wear" has occurred in three liners that had not been oil lubricated.

The wear was due to dehydrator aluminum oxide dust and excessive pipeline dirt.

The company points out that under these conditions it's doubtful that oil lubrication would have helped.

It adds, however, that in several instances of severe dirt and salt concentrations, oil was used to try to reduce wear and flush out packing cases.

What's New / IN TRANSPORTATION

Colorado Gas Transmission Co., a new corporation, is seeking authority to build a pipeline to move gas from the Ignacio and Blanco fields, in southwestern Colorado, to several communities in the state.

The 20-in. line will terminate at Colorado Springs. Other communities that would be served en route include Pagosa Springs, Del Norte, Monte Vista, Alamosa, Walsenburg, and Pueblo.

Estimated cost of the line is $22-million.

The Colorado Public Utilities Commission says it will schedule a hearing on the proposal in a few weeks.

•

Work has started on the $30-million pipeline that will carry crude for the first time from British Columbia's Peace River area to Vancouver.

The line is scheduled to be operating this year.

It will be owned by Western Pacific Products & Crude Oil Pipelines, Ltd., a new company formed under the sponsorship of Westcoast Transmission Co., Ltd. (PW—Jan.20'61p 50).

Two field parties have begun location work, one proceeding from Fort St. John southward, and the other moving northward from Savona.

•

Humble Oil & Refining Co. will move the headquarters of its Marine Division from New York to Houston.

The move is expected to be completed early in the spring.

The division is in charge of a fleet of 24 U.S. flag tankers, as well as inland waterways vessels.

Among Marine Division personnel moving to Houston will be John D. Rogers, general manager; and J. E. Stoveken and Sidney Wire, assistant general managers.

Better Planning Needed for Research

Funds should be allocated among development research projects, says Esso Research, on the basis of:

- **Cost of the research effort**
- **Incentive to perform the research**
- **Project value, on present worth basis**
- **Penalty for not doing the research**

Systematic planning of research projects has become a necessity in the oil and petrochemical industry, in order to allocate wisely the rate of spending among various projects.

Research expenditures have grown immensely in the past few years. This is mostly because more research is being done, and because, due to worldwide inflation, it costs substantially more to do the same amount of research.

In any balanced research program within a company, there should always be more ideas available to exploit by research than there are funds available.

Management must therefore select the best projects on which to work, and determine how fast they should be completed.

At the recent meeting of the American Institute of Chemical Engineers, in New Orleans, Geo. F. Pappas and Donald D. Mac Laren explained how Esso Research & Engineering Co. is approaching this decision-making problem.

Research projects can be divided into three phases: fundamental, exploratory, and development research.

A hypothetical research case history may run somewhat as follows, the Esso Research engineers told PETROLEUM WEEK. In the fundamental stage, physico-chemical studies may suggest that a good catalyst for a certain process could be made by adding to a support material any one of several active ingredients.

The project then shifts to the exploratory phase, during which a great many formulations will be prepared for this catalyst, and tested for activity, selectivity, regenerability. Of these many formulations only a few may warrant further consideration.

With these few catalysts as the heart of the process, pilot-plant work will be performed to study the effects of process variables on activity and selectivity, while the frequency of regenerability is changed; this completes the exploratory phase of the research project.

This work may indicate that one of these catalysts is superior in performance, and final optimization of the process in large-scale pilot-plant equipment will be carried out with it. The research project has now reached the development phase.

Systematic planning applies essentially to research projects in the development phase.

Development projects are those for which successful commercial application is almost assured. They constitute the area of research about which most is known, and it is to this type of projects that initial allocation of research funds should go.

Subsequent allocations, if funds are available, would go to exploratory work, and to fundamental research. In these areas of research projects "a decision as to their selection must be made as a matter of judgment, and accepted as a matter of faith," the Esso Research engineers said.

Planning for petroleum processing development research involves three steps. The first is an estimate of research costs and incentives.

Esso defines incentive as "the improvement in the company's cash position that would be brought about by the successful application of the results of a research project, as compared to not doing the research on this project, and fulfilling the need by the best available alternate."

Estimated research costs and incentives must be determined on the basis of realistic projections of earnings.

The criterion Esso uses for such an estimate is referred to as "present worth basis." This basis recognizes that a dollar earned today is worth substantially more than a dollar earned, say, five years from now, because of the company's ability to reinvest the earlier earnings during the intervening five years.

Factors that must be considered in evaluating incentives are:

- Operating costs and investment savings, estimated in the light of the best available alternates.
- Time of first application, keeping in mind that the earlier a process is likely to be applied, the greater its value, on a present-worth basis.
- Number of plants to be constructed, and how fast they will be built.
- Potential licensing income, which may become an import factor, particularly if the process promises broad applications industrywide.

In making the many small decisions required for the evaluation of these incentives, "it is essential," the Esso Research engineers indicated, "that assumptions, which are a matter of judgment, reflect a well-informed and sound point of view."

Finally the marginal rate of return must be carefully chosen, since it has an appreciable effect on incentives. It can affect the relative value between projects which involve operating-cost savings, and those which involve only investment savings.

The second step consists in calculating what the penalty would be if the research project were delayed.

The annual penalty for a delay, expressed in dollars, is affected by many factors. Among them:

- The importance of a project

being completed at a specific time. (The greater the incentive for completing a project when it is needed, the greater will be the penalty for its delay, all other factors being equal.)

- The relative economics between the best alternative, in case it is decided that research will not be undertaken, and the temporary alternative chosen during the delay period, while research progresses.
- The possibility of converting certain existing plants during the interim period.
- Any loss due to the change of value of the product with time.
- Any loss in market position that may accompany the delay.

The third step consists in allocating research expenditures among various projects in such a way as to minimize the total penalty for late completion.

This method emphasizes the importance of concentrating efforts on the most urgent of several projects.

It also points up the relative benefits that each research project in the development stage may derive from any increase in the level of the effort —such as more man-hours, or more expense per unit of time.

When making its decisions, management has to consider that there are generally several ways of achieving foreseeable requirements in a refinery.

This is particularly important when these requirements entail large investments, such as the construction of a new unit or a new plant.

To select the best available alternative to a research project, several possibilities must be considered:

(1) The best alternative may be to apply, without further research, certain technology that has been developed, but has not yet been applied.

(2) Another alternative may consist in licensing technology from others who are developing it.

(3) Still another alternative may be to forget about the research project entirely, and to invest the funds available into other marginal projects that require no research.

A computer is very useful for the incentive calculations, Esso Research found, and for the calculations of delay penalties as the basis for subsequent allocations (steps 1 and 2). Computer calculations are more consistent, and avoid human boredom, Esso Research engineers pointed out.

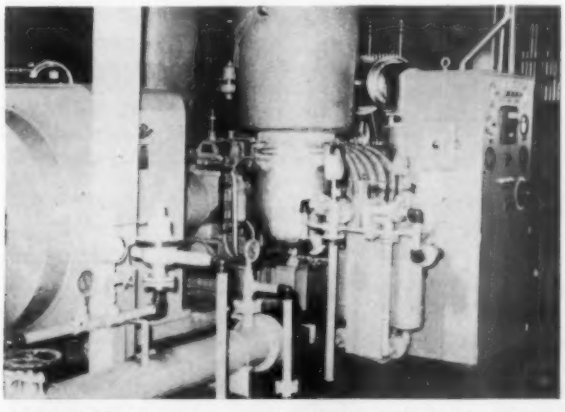
But the calculation of the allocation itself is best done by hand, they said, to help keep things in perspective; it can be done easily on the slide rule.

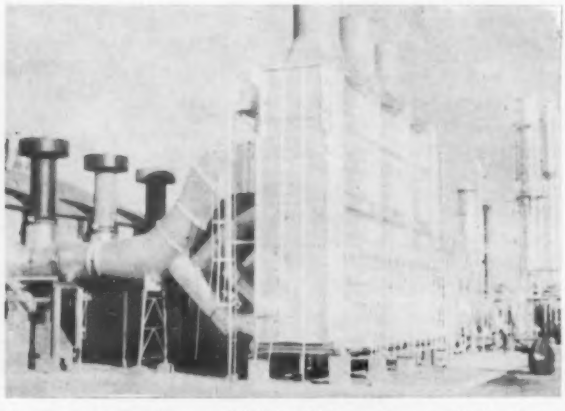
A computer program, however, could advantageously be worked out to calculate allocations for a great number of research projects, especially when such factors as the rate of growth of each is taken into the picture.

All technicians do not agree on the terminology of the three major phases of research. Some add further distinctions.

At the AIChE meeting, for example, James Brian Quinn, of Dartmouth College, commenting on his conclusions of a two-year study of 35 major companies, made further distinctions. He called fundamental "fountainhead" research a "search for new knowledge in a general field without reference to a specific application." And he called fundamental "support" research programs those "for which the search for knowledge is ancillary to the specific purpose of the work"—for example, solving a technical problem to utilize its solution directly in a practical application.

These fundamental support research projects, which Quinn in turn divides into defensive and offensive programs, parallel more closely the exploratory research phase of the Esso Research engineers.





GAS TURBINES at Laverne Gas Products plant (left) deliver exhaust to process heaters (right) which perform multiple duties.

Turbine-Heater Combination Is 80% Efficient

Three gas fired turbines each drive a 1,000-kw., 2,400-volt generator, at 1,200 rpm., at the Laverne Gas Products plant in Harper County, Okla.

The current produced is used to power two 500-hp. electric motors.

This plant is operated by Sun Oil Co. for 62 joint owners (page 38).

A portion of the exhaust from each turbine—which is approximately 97% hot air—is led to the bottom of a process type heater, where additional fuel gas is fired. The bulk of the exhaust enters the convection section of the process heaters.

These heaters perform economically a quintuple task. They act as still reboilers, gas regenerators, de-isobutanizer reboilers, circulating oil heaters, and, since just recently, as depropanizer feedstream heaters.

The over-all efficiency of heat utilization of the turbines and the heaters is about 80%.

Operation of the plant is automatic, and is monitored from a central control room.

B. L. Short, of Sun's natural gas department, described the plant at the convention of the Natural Gasoline Assn. of America which met this week in Dallas.

Joint-Owned Plants Can Be a Headache

Joint ownership and operation of natural gasoline and gas processing plants is beneficial in many ways: Large scale and more flexible operation is possible, and lower cost is the rule. But joint-owned plants also bring up many complicated legal problems.

The advantages and the problems of joint-owned plants were reviewed at a recent forum of the Natural Gas Assn. of America, in Dallas, by Henry H. Beeson, natural gas coordinator of Mobil Oil Co. He described a number of typical joint operations, going back to such early projects as the Cotton Valley unitization and cycling project in North Louisiana, for which an agreement was reached in 1940, after many years of lengthy and involved conferences.

One of the fundamental principles of a joint plant is that the gas must be owned by the parties in the same proportion as the ownership of the plant, according to Beeson. This can be done, he said, either when each owner buys an undivided interest in all the gas processed, or when ownership of the plant is maintained in proportion to ownership of the gas.

When natural gasoline is involved, its ownership may be prorated in a variety of ways, with yearly readjustments.

The plant operation functions under the direction of the several plant owners, and the trend is for these owners to form an operators' committee.

From a legal standpoint, Beeson said, it is highly desirable that the composition and authority of the operating committees be spelled out in considerable detail to forestall future controversy.

Matters are decided by vote, with a designated percentage of voting interest controlling. Other committees and subcommittees may be appointed as the need arises.

In all joint operations, it is required that each owner separately market and dispose of his share of the production—both liquids and residue gas.

In order to safeguard operations, the operating agreement usually provides that if any non-operator fails to take in kind and separately market his share of production, the plant operator may dispose of his share on a day-to-day basis, and remit the proceeds to the non-operator after deducting any additional cost incurred thereby.

Expenses are usually allocated in the same manner that production is owned.

Provisions covering additions to the plant must be made in the initial agreement. In a normal contract, the operator has authority to make expenditures up to a specified amount—often $5,000. But larger expenses—for example, for plant extension or changes in operating methods—may require the unanimous consent of all co-owners. In cases where this would be impractical, a designated percentage of owners—generally 60% to 75%—can bind the others.

One item that often brings about considerable discussion is overhead, Beeson said. Various methods to cover overhead are being used. Such items as general office expenses and employee benefits may be included—or a fixed sum may be allocated to the operator, subject to the owners' approval.

In the past few years the circumstances giving rise to joint processing have become more complex, according to Warren M. Sparks, general counsel of Warren Petroleum Corp.

The parties, Sparks pointed out, sometimes number in the hundreds. Operation may involve gas owned by the co-owners or gas purchased from others, or a combination of the two. The enterprise may be limited to gathering and dehydration, or it may extend to processing for LPG, or for removal of helium, H_2S, CO_2, or combinations of the three. Furthermore, ownership may be different in each phase of the operation.

To complicate matters, government regulations, unheard of a few years ago, are creating complications and uncertainties for which no solution has yet been found, Sparks said.

Federal Power Commission regulation has some implications peculiar to jointly owned processing plants. Foremost is the problem of justifying rate increases involving co-owners who have each made their own independent sales of gas to interstate pipeline companies.

FPC regulations also pose a problem arising out of collecting, under a corporate undertaking, rate increases which have been suspended by FPC.

This adds a substantial record-keeping burden to the entire operation. "The operator of a joint-owned plant," Sparks warned, "should be careful to see that cognizance of a potential increased record-keeping burden is taken in the agreement, or he may have to rely on being able to make a satisfactory arrangement with the non-operators at a later date."

One vital point in any joint-operation project is to be sure that it is not set up as a partnership, according to Sparks.

The reason is that each partner in a general partnership has almost unlimited power to bind every other partner by contracts reasonably related to the operation.

"Think what it would be like," said Sparks, "if every co-owner in a processing plant could buy gas as he saw fit, or contract for an addition to the plant, and bind the other owners."

Olefin Reduction: How Costly?

Limiting the olefin content of gasoline to comply with antismog regulations may become an expensive proposition for refiners.

An evaluation of what such a procedure might cost was presented at the recent New Orleans meeting of the American Institute of Chemical Engineers by a group of research and development engineers from Atlantic Refining Co.

"While further reduction of olefin content in gasoline may be unnecessary," they said, "and while control of olefins may be desirable only in certain geographical sections, the interest to date is of sufficient magnitude that refiners are exploring the effects that olefin control may have on future processing plans."

Analyses have shown that certain naphthas from catalytic cracking, present in high concentration in the gasoline pool, contain the highest amount of olefinic material.

About 35% to 40% of these catalytic naphthas is olefinic—amylenes and hexenes, for example, are the most objectionable contributors to a high "bromine number," indicative of olefin content.

This information was obtained by mass spectrometer analyses.

A certain quantity of propylene polymer—an olefin—may also find its way into the gasoline pool, to a minor degree.

Several methods can be used to minimize the olefins in cat cracking

naphthas. One method consists in following cat cracking by a hydrogenation process.

This technique will offer a reduction of from 8 to 10 bromine numbers, Atlantic said. Hydrogenation generally results in a decrease in research method octane number and an increase in motor octane number, with no significant change in road octane.

A second method consists in following cat cracking by an alkylation operation.

Alkylation—that is, the reaction with isobutane to produce higher-boiling saturated hydrocarbons having a bromine number of zero and an excellent road octane—introduces a demand for isobutane which, in many cases, exceeds the quantities available in a refinery. Then isobutane must be prepared, by isomerization, from purchased normal butane.

A significant help in the effort to minimize olefin content in the gasoline can be obtained by using a silica-alumina rather than a silica-magnesia type of catalyst, according to Atlantic.

This, the speakers reported, is applicable to cat cracking as well as to reforming catalyst.

A reforming catalyst with silica-alumina as its base, they said, will produce a maximum of isobutane, which can be used for subsequent alkylation.

A silica-alumina cat cracking catalyst produces a slightly lower naphtha yield than a silica-magnesia catalyst, but the naphthas produced with this catalyst are much lower in olefin content, especially the heavier fractions, and the octane quality is higher, according to Atlantic.

An additional reduction of olefins can be obtained by the alkylation of propylene, if a substantial quantity of this material has found its way in the gasoline pool.

This additional reduction may amount to as much as three to four bromine numbers.

The cost of reducing the olefin content of gasoline may vary between wide limits, according to the process followed.

To remove the objectionable fractions of cat cracking naphthas by hydrogenation would cost about 4¢ per bbl.; by the alkylation process the cost may be as high as 16¢ or 18¢ per bbl. If hydrogenation of the naphthas is followed by propylene alkylation, the over-all cost for a reduction of 13 bromine numbers can be held to a minimum of about 9.5¢ per bbl.

The additional equipment needed for these processes entails a substantial capital investment, which may cost from $50 to as much as $150 per daily barrel of crude throughput.

In order to evaluate sensibly the cost of reducing olefins in gasoline, two assumptions must be made. One applies to the octane rating of the gasoline.

For their study, the Atlantic engineers projected to 1966 the octane rating trends that were reported in the recent Ethyl Corp. report.

In 1966, the research octane numbers should be 102 and 97, the motor octane 94 and 86, and the road octane 101.4 and 95.8 for premium and regular gasolines respectively.

Since reduction of olefin content of gasolines also reduces their sensitivity, the cost of olefin reduction can be reduced by holding constant the road octane of the gasoline, which is currently the most prevalent octane scale.

The second assumption consists in selecting a hypothetical refinery.

For their study, the Atlantic engineers selected a typical Gulf Coast plant, processing about 50,000 b/d of midcontinent crude.

What's New
IN PROCESSING

A potential market for petroleum coke is the manufacture of nuclear graphite.

Nuclear graphite is becoming increasingly popular in the U.S. as a moderator for gas-cooled nuclear reactors, particularly for nuclear rockets.

It has been used for some time in Europe, where more gas-cooled reactors have been built than in this country.

J. J. Baron, a scientist from Compagnie Pechiney in France, told a meeting of "French Engineers in the U.S." last week that over 3,000 tons of petroleum coke are being imported yearly to France from the U.S. to make nuclear graphite.

•

A full-scale plant for the manufacture of polybutadiene will be built at Sarnia, Ont., by Polymer Corp., Ltd. The company now has a pilot plant in operation there, producing a variety of stereo specific polymers, including several tons per month of polybutadiene.

Construction of the new plant will begin this summer, with completion expected before the end of 1962. The

(Advertisement)

. . . one of a series presented by Western Supply Company, Tulsa, to improve the "I. Q."* of engineers . . .
(*"Income Quotient")

IMPACT A RESULT OF CONTACT: PUBLIC SPEAKING NOT AN END, BUT A VITAL MEANS TO AN END

There certainly is no better tool in developing executive or management qualifications than through public speaking. Spoken words are a powerful tool of business. They are used to organize, motivate, coordinate, control, and train.

Since an executive must achieve results through people, he must be able to plan and organize. As a leader, he must be able to motivate and inspire people to action; he must make himself understood. He must have purpose and the will to make other people aid that purpose.

A speaker, too, achieves his results through people. He, too, must be able to plan and organize; must lead; must be able to motivate and inspire others to action; must make himself understood. The speaker must have a purpose and the will to make others aid that purpose. The skills of the executive are identical with those of a speaker, in these areas.

It is not surprising, then, that aspiring leaders in business and industry are judged by their associates and superiors by their abilities to communicate, to a great extent. It is not surprising that an executive can sell himself, can attain greater authority by broadening his capacities for directing and leading, through oral communication.

Words have great power, particularly the spoken word. Words give you contact with other men, and if you use them effectively, they give you—*impact*. That impact is multiplied as you develop your ability to speak, and as you speak to more important audiences.

If you are a novice in public speaking you are not alone. No more than 25 per cent of our speakers could qualify as "veterans."

Like conversation, speaking before an audience is based on sincerity and belief. It involves conviction and concern. The public speaker is most convincing when he is least artful, when he is most natural, and above all, when he is sincere.

Effective speaking is not an accident. It is not the special endowment of a few. While talking before many listeners may come naturally for a few, it is, by and large, a learned art. It consists of an idea, phrased simply, and delivered with conviction and with an expressive voice.

FOOTNOTE: the foregoing paragraphs are a direct quotation from another of Western's "personal-professional development" series, Booklet E-8, titled "Public Speaking: Impact A Result of Contact" a copy of which is yours upon request, without obligation. Write to WESTERN SUPPLY COMPANY, HEAT EXCHANGER DIVISION, P. O. Box 1888, Tulsa, Okla. — **where supervision contributes greatly to the manufacture of heat exchangers of the highest quality, and where personal attention to detail is our watchword.**

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The simple one-step HOUDRY DEHYDROGENATION PROCESS produces butadiene for synthetic rubber throughout the world. In addition, it can produce butene. Other mon- and diolefins may also be produced from the corresponding saturated hydrocarbons.

Capacity placed on stream in the U.S. since World War II is capable of producing very close to 50 per cent of the butadiene required by the domestic synthetic rubber industry. The HOUDRY DEHYDROGENATION PROCESS is also on stream in plants in Italy, West Germany, and Japan. Write for a full description.

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plant design is flexible enough to produce other stereo specific rubbers, such as polyisoprene, the company says. Its output will be about 20,000 tons per year, which will be sold in both domestic and export markets. The process has been licensed from Karl Ziegler, of Germany, and Goodrich-Gulf Chemicals, Inc.

•

Canadian Bechtel, Ltd., has been awarded the contract to build Shell Oil Co. of Canada's gas processing and sulfur plant near Pincher Creek, Alberta.

Engineering studies have already been started, although no construction date has been set. It is expected, however, that the plant will be completed in the latter part of 1961.

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A new 1,100 b/d alkylation plant is now on stream at United Refining Co.'s Warren (Pa.) refinery. It has successfully met all performance guarantees, United says.

The unit has been designed to process either butylene feed stocks, or combined butylene-propylene mixtures. M. W. Kellogg Co. was the contractor.

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A chemical fertilizer plant in India and a urea plant in Indonesia will be built by American contractors.

California Chemical Co. and International Minerals & Chemicals Corp., Skokie, Ill., along with the E. J. D. Parry Group, Madras, India, are participating in the $51-million Indian project, which was recently licensed by the Indian government.

The plant site is in the port city of Visagapatnam on the east coast, near a Caltex refinery which will provide some of the feed stock. Capacity will be 350,000 tons of chemical fertilizer annually.

The project will be completed in 1963, during the third year of India's current five-year plan, and is designed to help feed a population that is expected to reach 500-million by 1966.

Morrison-Knudsen International Constructors, Inc., Boise, Idaho, was awarded the $38-million contract for the Indonesian plant, which will be located in Palembang, Sumatra. Capacity of the government-owned facility will be 100,000 tons of urea annually. Morrison-Knudsen will initially operate the plant, and train Indonesian operating personnel. Its subsidiary, H. K. Ferguson Co., and Girdler Construction Co. will also participate in the construction.

The Market Trend

PETROLEUM WEEK

March 17, 1961

Rx for Refiners: Sulfur and Molasses

Refiners around the nation ought to take a spring tonic this week. They're nervous and gloomy. Prices don't look too strong in many areas. Ship rates are falling. Refinery runs are breaking records on the high side instead of learning discipline.

What they see in the inland gasoline markets doesn't make them feel so good. Along the Great Lakes Pipe Line, discounts of 0.5¢ are commonplace. Shadings of 0.75¢ are possible. In Chicago, undercuttings of 0.75¢ are beginning to be heard. Gulf Coast gasoline is locked out of the Midwest except at large discounts.

And the declines in distillate prices are far from finished. Another 0.25¢ break in the Chicago market is widely predicted. New York barge prices came in for special 0.2¢ allowances last week. Brokers are quoting spot cargoes at the Gulf at "0.25¢ off" on the date of lifting.

Come to think of it, though, March has always been a month of doubt and worry. It's a period of contracting demand. It's a period of tough negotiations, too, for many of the summer-winter fuel oil contracts are lined up now.

Remember March of 1957? That was the break-up of the Suez crisis, a great bonanza for U.S. refiners. Tanker rates for foreign-flag vessels fell from "plus 210" to "flat" in about a week's time. It was then, too, that the European buyers retreated once and for all from the U.S. Gulf.

In March, 1958, product prices made a last-ditch stand. Otherwise the price of crude would have broken for a fare-thee-well. But it was a heavy squeeze on refiners during the adjustment.

In 1959, March saw a big break in the Chicago gasoline market, for one piece of bad news. That month, also, East Coast coal contracts for Apr. 1 came out 50¢ a ton lower, which depressed heavy oil prices.

Ditto for 1960. Heating oil volume was wonderful, but at low prices. And it was just about then, too, that sales prices to the military—the biggest customer—hit the bottom.

Cheer up, though: April's almost sure to be better.

Gulf Wins a Big Supply Contract:

Gulf Oil picked up much of the Uruguay crude oil business last week. It will come to 455,000 cubic meters over the next three years.

Gulf's offer was 270,000 cubic meters of "recon" crude at $1.64 a bbl., f.o.b. Kuwait, and the balance straight Kuwait crude at $1.59.

Russian Oil Competes Well:

A trial cargo of Russian crude was tested at the Cubatao refinery of Petrobras, in Brazil. This Volga-Ural basin crude was a little high in sulfur, but compared pretty much on a par with Western oils.

The Market Place

AROUND THE WORLD

Current key crude and product prices compiled for PETROLEUM WEEK by Platt's OILGRAM Price Service, a McGraw-Hill Publication.

All prices as of March 13

Bold face type indicates changes from previous week

KEY PRICES—REFINED PRODUCTS

(¢ per gal. except dollars per bbl. where $ is shown)

Western Hemisphere

U.S. Gulf Coast, cargoes
- Gasoline, 98 oct prem....12.25-13.25
- Gasoline, 92 oct reg....11.25-11.5
- Kerosine....10.25-10.75
- Heating oil, No. 2....9.5-10
- Gas oil, 48-52, d.i....9.75
- Fuel oil, bunker "C"....$2.30-2.40

Caribbean, cargoes
- Avgas, Grade 100/130....14.75
- Gasoline, 93 oct research prem....10.875
- Gasoline, 87 oct research reg....9.5
- Gasoline, 80 oct research....8.75
- Gasoline, 70-72 oct motor method....8.625
- Kerosine....9.875
- Heating oil, No. 2....8.625
- Gas oil, 48-52 d.i....8.875
- Fuel oil, bunker "C"....$2.00

New York Harbor, barges
- **Kerosine....11.45↓-11.9**
- **Heating oil, No. 2....10.45↓-10.9**
- Fuel oil, No. 6....$2.62

Okla.-Group 3, northern shpt., bulk
- Gasoline, 91 oct reg....12.5-13.25
- Kerosine....10.625-11
- Heating oil, No. 2....9.25-9.75
- Fuel oil, No. 6....$1.80-1.90

Chicago, bulk
- Gasoline, 92 oct reg....12.375-12.625
- Heating oil, No. 2....10-11.85
- Fuel oil, No. 6 high sulfur....7.65

Los Angeles, rack
- Gasoline, 88 oct reg....11-12.65
- Diesel fuel, PS 200....7.75-11.25
- Light fuel, PS 300....$2.90
- Heavy fuel, PS 400....$2.10-2.45

Natural Gasoline, Grade 26-70
- FOB Group 3....4.5
- FOB Breckenridge, Tex....4

LP-Gas
- Propane, Oklahoma (Group 3)....4.5-5
- Propane, Baton Rouge....5.875

Pennsylvania Lubes
- Bright stock, 25 p.t....26
- 200 vis. neutral, 25 p.t....28

Mid-Continent Lubes, Tulsa basis
- Bright stock, solvent, 95 v.i....26-27
- Neutral solvent, 200-210 vis....23-24

Gulf Coast Lubes
- Bright stock, solvent, 95 v.i....26-27
- Neutral, solvent, 200 vis....23-24

Eastern Hemisphere

Singapore (Pulau Bukom) cargoes
- Avgas, grade 100/130....15.5
- Gasoline, 79 oct research....9
- Kerosine....9.75
- Gas oil, 48 d.i. minimum....9

KEY PRICES—CRUDE OIL

(2¢ differential per deg. of grav. applies except as noted)

Western Hemisphere

United States (at the well)
- Mid-Continent, (Okla.-Kan.), 36.0-36.9....$2.69-2.97
- North Dakota, 36.0-36.9....2.47-2.87
- Texas:
  - Gulf Coast, low cold test, 26.0-26.9....3.50
  - Gulf Coast, Upper & Lower, 26.0-26.9....2.92-3.22
  - West Texas, sweet, 36.0-36.9....3.00
  - West Texas, N.M., inter., 36.0-36.9....2.93
  - West Texas, N.M., sour, 32.0-32.9....2.71
  - East Texas, flat....3.05-3.25
  - Mirando, 28.0-28.9....2.96-3.31
- Illinois Basin, flat....3.00
- Pennsylvania Grade, Bradford dist., flat....4.80
- California, Signal Hill, 21.0-21.9....2.33†
- North Louisiana-Arkansas, 36.0-36.9....2.72-3.02
- Wyoming, sweet, 36.0-36.9....2.85-2.90
- Wyoming, sour, 32.0-32.9....2.63-2.71

Canada (flat prices, at the well)
- Pembina (Alta.)....$2.38
- Leduc-Woodbend (Alta.)....2.53
- Redwater (Alta.)....2.42
- Steelman A (Sask.)....2.425
- Virden (Man.)....2.285

Venezuela (Cargoes, FOB lifting port designated)
- San Joaquin, 41.0-41.9, Puerto la Cruz....$3.10
- Oficina, 35.0-35.9, Puerto la Cruz....2.80
- Tia Juana, Medium, 26.0-26.9, Amuay....2.30
- Bachaquero, flat, La Salina....1.85
- Lagomar, 31-31.9, Cardon....2.55
- Lagunillas Heavy, flat, La Salina....2.07

†Differential per deg. of grav. varies

Eastern Hemisphere

Middle East, Persian Gulf (Cargoes, FOB lifting port)
- Arabia, 34.0-34.9, Ras Tanura....$1.80
- Safaniya, 27.0-27.9, Ras Tanura....1.47
- Iran, 34.0-34.9, Bandar Mashur....1.78
- Iran, 34.0-34.9, Abadan....1.73
- Iraq, 35.0-35.9, Fao....1.72
- Kuwait, 31.0-31.9, Mina-al-Ahmadi....1.59
- Qatar, 41.0-41.9, Umm Said....1.95
- N. Zone, Burghan, 23.5-24.4, Mina Saud....1.48
- N. Zone, Ratawi, 23.5-24.4, Mina Saud....1.41
- N. Zone, Eocene, 16.5-17.4, Mina Saud....1.28

Middle East, Eastern Mediterranean
- Arabia, 34.0-34.9, Sidon....$2.17
- Iraq, 36.0-36.9, Tripoli, Banias....2.21

North Africa, Phillipeville, Algeria
- Hassi Messaoud, 48 and above....$2.65

KEY TANKER RATES

(Last paid, per long ton, single voyage)

- U.S. Gulf-New York, clean....(ATRS flat) $2.85
- **U.S. Gulf-New York, dirty...(ATRS+10%) $3.14↓**
- NWI-USNH, dirty....(ATRS—60%) $1.10
- NWI-UK/Cont., dirty....(Scale—62½%) 12/3*
- **Persian Gulf-UK/Cont., dirty (Scale—50%) 30/9*†**
- Persian Gulf-USNH, dirty....(USMC—65%) $4.45

**Sterling*

Gas reforming hits a new high Engineering news was made in France recently, when a Chemico high-pressure gas reform furnace operating at 250 psi was placed on stream. Prior to the completion of this project, no gas reformer in the world had ever operated at pressures above 175 psi. Design innovations incorporated in this plant reduce compression requirements and increase heat recovery.

This historic breakthrough in gas reforming is indicative of the skill and experience which Chemico brings to all process engineering problems. Chemico services to clients in the process industries range from initial laboratory research and testing to final construction and start-up. If you are interested in learning more about Chemico, write to "Department B".

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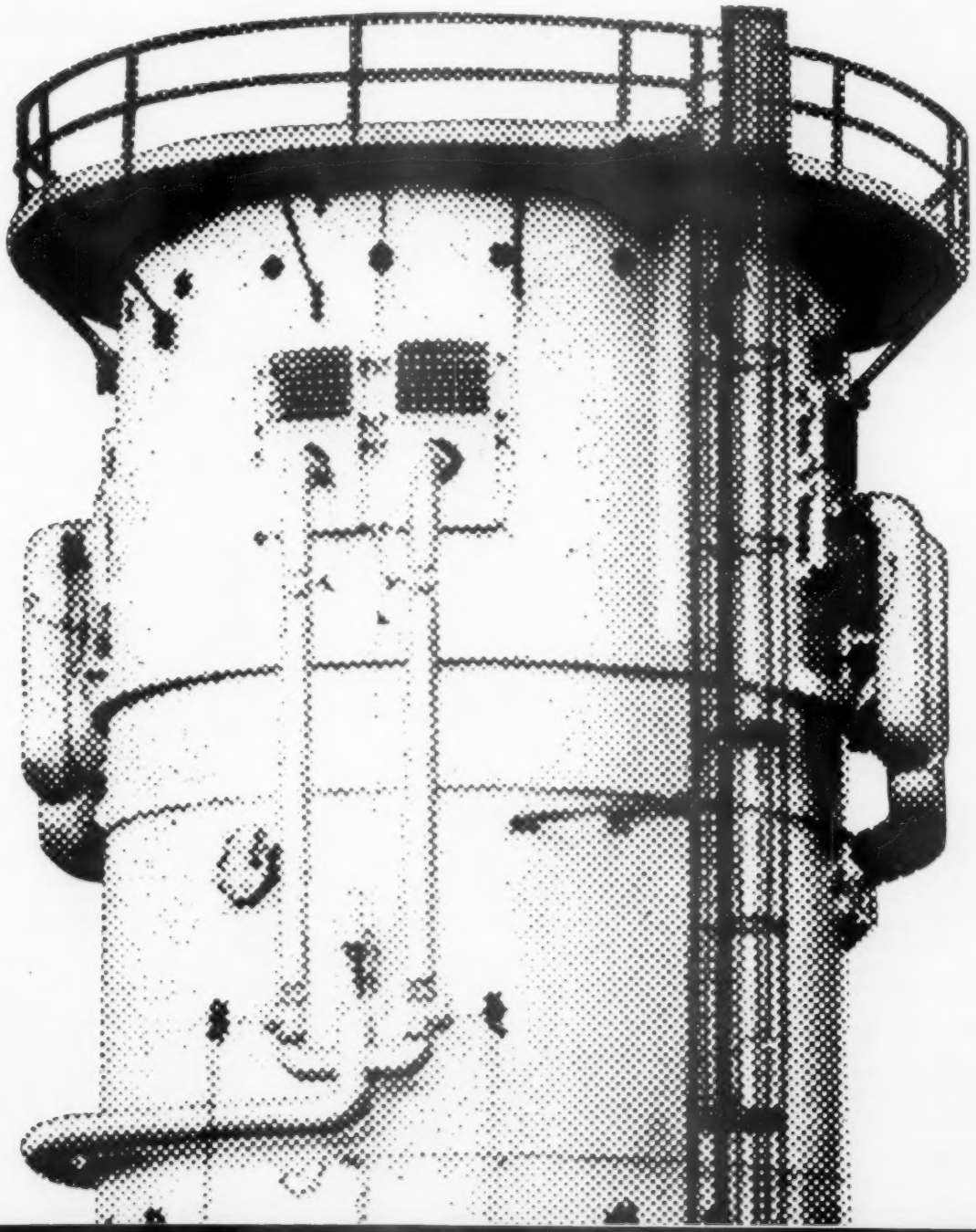
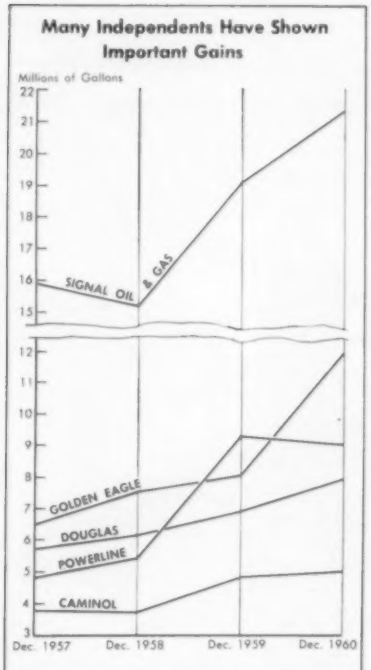
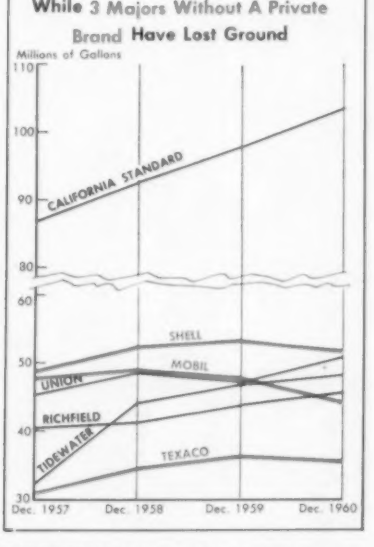


Price Dispute Rages in California





INDEPENDENTS in California have increased their gallonage by 27% over the past four years. But the majors, as a group, have gained by only 14% over the same period. Shell, Mobil, and Texaco, which have no private-brand subsidiaries, have had the poorest showing. The chart combines important subsidiaries with their parents. Figures are based on state tax receipts and a market study by Dan Lundberg, Los Angeles public relations counsel.

A price war in Los Angeles has aggravated the problems arising from dual marketing in California.

Prices have tumbled to as low as 21.9¢ a gal. (including 10¢ tax) for private-brand gasoline and 22.9¢ a gal. for major-brand product. The war is spreading north to San Francisco.

At the root of the disturbance is a battle between major marketers and the so-called dual marketers. These are majors that distribute gasoline through acquired private-brand outlets as well as through their own major-brand stations.

Independent distributors are growing anxious about the issue, fearing that the major-company fight will pull them into untenable price positions.

The Independent Operators Committee, a splinter group of the Serve Yourself & Multiple Pump Assn., met last week to appraise the situation.

The committee was told there are 900 independent stations in the Los Angeles market. Of these, 550 are supplied by major companies.

As these stations battle with major stations for the "right" to price 2¢ below major-brand prices, they pull the true independents, those supplied through independent refineries, into a price war.

The independents fear they may not be able to recover from a protracted price war.

William C. Dixon, assistant state attorney general for antitrust, attended last week's distributor meeting. He said that two state laws applied to their problem, one dealing with monopolies and conspiracies, the other with below-cost selling.

He revealed that the attorney general's office was watching for any violation of these laws.

Independent outlets, as a group, have shown considerable market growth over the past few years.

Dan Lundberg, public relations counsel for the association, prepared a report that was exhibited at the distributors' meeting. It compared sales of 20 independents with seven major companies.

The study showed that the independents had increased their gallonage by an average of 27% over the past four years. Some had performed considerably better than this.

Seven major companies, on the other hand, had averaged only a 14% growth.

The independents claim, however, that their comparative growth is illusionary.

A counter-balancing factor indicates that their position is becoming worse instead of better.

More and more, the distributors say, the major companies have taken over the independent stations and turned them into outlets for their products.

Most of this is accomplished through the dual-branding approach —although some major company supply reaches independent stations through the open market.

The trend toward open-market selling fell somewhat, however, during the past four years, according to the Lundberg report. Mobil, for example, ceased supplying its last independent marketer two years ago, the report shows.

But because of the growth in dual marketing, the report concludes, "the lesser share of the over-all market by majors is due to their supplying the source of growth to the independents."

This is made clear, the report shows, by the fact that, despite the growth of independent marketers, independently manufactured gasoline in California has fallen off by 65% during the past four years.

There are, however, three majors that have not participated in the booming independent market.

These companies have actually lost gallonage over the past few years.

Shell Oil Co., Mobil Oil Co., and Texaco Inc. have clung to a major-brand-only policy that has apparently cost them a considerable market share in California (chart).

Their position has degenerated in comparison to the other four major companies, all of which sell through both major and independent stations.

Observers in California say that Shell, Mobil, and Texico have apparently decided to dispute the 2¢ differential that gives their dual marketing competitors a considerable advantage.

Shell admitted as much to PETROLEUM WEEK (PW—Feb.24'61,p48).

Distributors in California feel that, unless the dual marketing controversy is resolved, price wars will continue indefinitely.

In their view, there are two pos-

sible solutions: Either the majors that do not have private brands should stop trying to close the pricing gap between themselves and the dual marketers, or the dual marketers themselves should volunteer to give up their price discounts and start pricing all their stations closer to major-brand levels.

Major companies, to some extent, view the source of difficulty from a different angle. They feel that independent stations at times try to post prices below those of the major-supplied private brand outlets.

Whatever the exact nature of the problem, all marketers agree that some solution is becoming more and more urgent.

Only recently Continental Oil Co. (through its purchase of Douglas Oil Co.) enlarged the ranks of the dual marketers. And last year Gulf Oil Corp. acquired Wilshire Oil Co. (PW —Jul.8'60,p94).

Conoco and Gulf are actually a new variety of dual marketer: They market in California only through their recently acquired independent outlets.

Dealers Try Co-op Buying To Compete With Chain Stores

Twenty-five dealers in the Richmond (Va.) area have formed a co-operative. Their aim is to strengthen their buying position in the accessory market.

Hardly more than two weeks old, the co-op already is buying filters, fluids, additives, and other automotive products directly from manufacturers.

The Virginia Automotive Service Co-operative (VASCO), though strictly a local affair, may be an answer to problems facing dealers throughout the country.

Dealers who buy in small lots often find that discount stores and automotive chains are underpricing them.

One recent example is de-icing compound. Dealers in Virginia rushed to buy this product when it appeared on the market last fall. They paid $1.22 for each unit and planned to sell it at $1.95. But as the winter demand waned, they watched the chain stores drop their price from $1.39 to 89¢.

Antifreeze is another example. According to C. W. Shewbridge, Jr., vice-president of VASCO, dealers in Richmond have lost half their business in this item in recent years. He estimates that service stations have dropped below 50% in their share of the market.

"And there just isn't a market for dealers any more in polishes and waxes," he says.

By buying directly from manufacturers, the dealers bypass two important suppliers of automotive products—the automotive distributor and the oil company.

Oil companies generally offer their dealers a complete line of TBA products to sell along with their petroleum products. But the co-op dealers, in some cases, would prefer to purchase TBA items through their own channels.

The strongest motive underlying the VASCO development is the desire of dealers to escape the high prices of distributors.

The fact that friction between dealers and distributors exists has been overshadowed, of late, by meetings between the National Congress of Petroleum Retailers and the Automotive Service Industry Assn.

At the lower level, dealers are bitter about the discounts that distributors extend to chains, Shewbridge says.

The Virginia Gasoline Retailers Assn., an NCPR group, has endorsed VASCO. And a majority of VASCO's members belong to the Virginia dealers association, he notes.

Many problems lie ahead of the dealers as they attempt to make a success of their co-op.

Other dealers that have tried co-op buying have stumbled over the warehousing and accounting problems. VASCO has hired a 3,000-sq.-ft. storehouse, a warehouseman, a lawyer, and an accountant to smooth the road in these areas. Funds for these services are provided initially by a sale of $100 stock to co-op members. Each member buys five shares.

Delivery details are handled this way: The manufacturers will deliver to the warehouse, and when a dealer wants to withdraw from the co-op's supply, he pays cash to VASCO and picks up the items himself.

A special buying committee has been formed, to settle differences of opinion over what the co-op should buy. But a greater problem, Shewbridge says, will be in trying to generate continued interest in the cooperative among the dealer members.

What's New
IN MARKETING

Richfield Oil Corp. (L.A.) has again moved into second place in the Washington State market, displacing Shell Oil Co.

Richfield, which also has been moving up steadily in California too (chart, page 44), paid taxes on 8,221,535 gal. in January, while Shell posted 8,212,156 gal., according to the Liquid Fuel Tax Division of the Washington State Dept. of Licenses.

Prior to January, Richfield had topped Shell only twice in monthly gallonage, once early last year and once several years ago.

Standard Oil Co. of California, meanwhile, has increased its lead over all competitors showing a gain of 890,334 gal. in January. It reported a sales total of 12,640,902 gal. Richfield had gained 598,524 gal. while Shell moved up by 83,039.

Texaco Inc. is in fourth place, followed by Mobil Oil Co., Union Oil Co. of California, Time Oil Co., Humble Oil & Refining Co., and Signal Oil Co.

•

Ashland Oil & Refining Co., one of the nation's top 20 marketers, consolidated its position in Cayuga County, New York, last week with the purchase of Gormley Oil Co.

The move gives Ashland 20 service stations (that formerly marketed under the Shell Oil Co. brand) and a bulk plant. Ashland, which markets through almost 4,000 stations, has been conducting an extensive program of purchasing storage properties throughout its Midwest marketing territory.

It recently purchased Christopher & Wright, Inc., another Cayuga distributor.

•

If gasoline sales have fallen off, it's not the fault of gasoline taxes. They haven't been high enough to have made much impression on motorists, the Bureau of Public Roads contends.

In a detailed study, the bureau shows that increases in the combined state and federal tax has had no long range effect. It offers three reasons why: First, the motorist is used to paying tolls that are high by comparison with the tax. Second, the tax represents a decreasing portion of the total cost of driving, and, third, the taxes are "so low that it seems unreasonable to attribute great economic impact to them."

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Burns will provide guards trained in the science of security, and, where feasible, will include electronic protection in the form of TV surveillance and radar detection.

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Shell-Kuwait Offshore Terms Disclosed

The "real spirit of partnership" is emphasized in the new Shell-Kuwait offshore agreement, though it is only partly spelled out in the official texts made public last week.

The concession agreement and two associated documents were signed Jan. 15 and published later in Kuwait's official gazette. None of them, as finally written, makes any specific reference to Shell aid for Kuwait in getting started on its own overseas marketing (PW—Dec.23'60,p15).

The assumption in oil circles thus is that this matter is handled in an unpublished exchange of side letters.

Broad terms of the pact, as previously announced, provide for 50-50 profit sharing, an option for Kuwaiti purchase of up to a 20% participating interest after oil is found, and payments to Kuwait of bonuses and rentals totaling some $100-million.

These terms are detailed in a 36-article Oil Concession Agreement signed by the Ruler of Kuwait and Kuwait Shell Petroleum Development Co. Ltd. A separate 14-point Memorandum of Agreement outlines further rights and obligations on both sides if Kuwait—as expected—exercises its participation option. The third document officially published is a letter from Kuwait Shell offering cooperation on several points that are either left open or not covered in the concession pact.

The concession agreement says Shell will endeavor to promote the "joint and respective interests" of itself and its Kuwaiti partner if Kuwait elects to participate in a joint venture after oil is found.

It goes no further than previous announcements in detailing the nature of Shell's assistance, adding only that Shell will also "consider in a friendly spirit any possibilities of further cooperation which may develop in the course of time."

Shell, however, is committed under the supplementary Memorandum of Agreement to buy the Kuwaiti share of crude produced by a joint development company—unless given prior notice that its Kuwaiti partner wants to make other disposition of all or part of its share.

Any crude that the Ruler of Kuwait may take as a 12½% royalty in kind will be deducted from net production in determining the relative shares of both partners.

OFFICIAL SIGNING of Kuwait offshore concession agreement was done by the Ruler of Kuwait, Sheikh Abdulla al-Salim Al-Subah, and, for Kuwait Shell Petroleum Development Co., Ltd., F. J. Stephens, a Managing Director of the Royal Dutch Shell Group.

The price Shell will pay in sterling for its partner's oil will be either the realized price or posted price minus 10%, whichever is greater.

This "realized price" will be the average net price f.o.b. received at a Kuwait export terminal for "all fully commercial export sales" and will be determined from actual selling prices after deducting any delivery expenses.

Determination of posted prices is specifically left to Shell: It will establish them "in accordance with commercial principles" at which it offers crude to buyers in cargo lots of f.o.b. tankship at its Kuwait export terminal.

The only qualification is that the Ruler will have the right at any time to call on Shell to show that its posted price is that of crude offered to buyers generally.

Kuwait may exercise its option for up to 20% participation "within 90 days" of discovery of oil in "commercial quantities"—which is defined as "at least 15,000 b/d" combined producing capacity in two or more wells.

It is understood that this option is open only at such an initial discovery and cannot be exercised later, though the concession pact does not emphasize this point.

The option may be exercised directly by the Ruler of Kuwait, or indirectly by the new 60% state-owned Kuwait National Petroleum Co. as his nominee. The Ruler will decide whether the participation will be under 20%.

The sterling payment Kuwait will make for its interest will equal 20% of Shell's total expenditure—but excluding bonus and rental payments made or due up to the date of discovery. Thereafter, it will carry its proportionate share of all further bonus and rental payments, as well as all other costs.

The Ruler is entitled to appoint one director to the board of the development company—whether or not the option to participate is exercised. This will be in addition to the Kuwaiti representation proportionate to its participating interest.

The 45-year concession agreement calls for substantial and regular acreage relinquishments—the first at the third anniversary of the commercial discovery date, and thereafter at the end of every five years.

Each will aggregate 20% of the total "unexploited area" at the time. This is defined as that part of the concession that "does not comprise productive structures."

The concession excludes six islands and starts six miles from Kuwait's

shore, extending outward into the Arabian Gulf to boundaries not yet precisely defined by Kuwait and neighboring gulf states.

Kuwait Shell, acknowledging this problem, states in its letter that it will make relinquishments from within the "approximate" boundaries.

No starting-point for regular crude exports is specified, and the question of building a refinery in Kuwait is also left open.

Only an indication is given that exports might be expected to start at an early date—in one provision that says: "The company shall take all necessary measures after the discovery of petroleum in any well to put such well into operation without undue delay."

On refining, one article says Shell "undertakes to discuss and decide" with the Ruler whether or not to build a processing plant after a "substantial" daily production rate has been reached.

Among factors to be taken into account: the "desirability" of increasing profits in which the Ruler will share; and the economics of refining in Kuwait for the company.

The pact requires that Shell "consult with" the Ruler on possible alteration of terms if increased benefits "should come generally to be received" by Middle East governments from changes in terms of concessions existing as of last January or new concessions granted thereafter.

This provision is carefully worded, implying no commitment on either side.

Shell, it says, will consult "whether in the light of all relevant circumstances, including the conditions in which operations are carried out, and taking into account all payments made, any alteration to the terms of this agreement would be equitable to the parties."

No change can be made in the concession terms—by the Ruler or the company—unless they "jointly agree" that any such change "is desirable in the interest of both parties."

Neither can it be annulled by the Ruler—"by general or special legislation, or by administrative measures, or by any other act whatever."

Only if the company fails to fulfill terms of the agreement is the Ruler "entitled" to terminate it. Shell, incidentally, "renounces" any right of diplomatic recourse on matters relating to the agreement.

The pact provides for three-man arbitration of differences on its interpretation or execution, by one arbitrator chosen by each and a referee by those two.

Shell affiliates are "ready to consider" chartering two tankers financed by Kuwaiti capital.

This is stated by Kuwait Shell in the letter published with the concession agreement. The pact itself provides only that Shell charter at least one Kuwait-flag tanker with majority Kuwaiti ownership—when it is in the market to charter tankers, if the vessel suits its needs, and if it is available at prevailing market rates at the time.

Kuwait Shell's letter said further that, to avoid adding another two tankers to the existing surplus, "we would examine whether the tankers so financed should be appropriated from those already contemplated for the Shell Group Service."

Here are highlights of other concession terms detailed in the text:

- **Exploration-drilling:** surface work to start by mid-September, 1961, and the first test well by mid-1963 (which Shell expects to spud in by early 1962); drilling thereafter of one or more tests aggregating at least 20,000 ft. unless commercial oil is found earlier.
- **Bonus payments totaling £30-million ($84-million):** £7-million paid on signature; £7-million due January 1965, or when net production reaches 100,000 b/d, whichever is earlier; £4-million for each added 100,000 b/d up to 500,000 b/d.
- **Rentals:** £1-million annually until crude discovery date or January, 1963, whichever is earlier; thereafter, £2-million annually until regular crude exports start.
- **Royalty:** 12½% of posted price for each barrel of net production.
- **Government profit share:** 50% of the "profit" computed on the basis of posted prices minus cost of operations. Bonuses and rentals are not deductible from operation costs.

France Pushes Home Front Search, Too

FRANCE'S OIL EQUATION: French exploration since 1945 has been notably successful, as above figures show. Proven reserves include natural gas expressed in oil equivalent. The major part of the reserve is in the Sahara.

PARIS—The French oil industry, noted for its exploration success in North Africa, is also pushing hard to find and develop oil reserves in its own front yard—metropolitan France.

That was revealed by figures just released by the government's Bureau de Recherches de Petrole, which show that drilling on the mainland totaled 1.1-million ft. in 1960. This is just 9% lower than the 1.2-million ft. drilled in Algeria and the Sahara.

Last year almost three times as many exploratory tests were drilled in metropolitan France as in Sahara and Algeria combined.

The comparable figures were 140 exploratory tests for the mainland compared with 48 for the Sahara and Algeria.

Also in 1960, the total number of holes drilled on the mainland—234—was 51 more than in the North African regions.

In Metropolitan France, 76 holes were completed as oil producers and eight as gas wells, while in the Sahara there were 128 oil producers and 14 gas wells.

Despite the intensity of mainland exploration, however, the Sahara is far and away France's chief oil producing area, accounting for 75% of total franc-zone production in 1960.

Production from the big Saharan fields last year averaged 172,800 b/d. In metropolitan France, production totaled 38,520 b/d last year. Of this, 9,640 b/d came from six small fields in the Paris Basin, France's newest producing area. Another 22,601 b/d was produced by Esso Parentis field in the southwest. Other small fields accounted for the remainder.

The rest of the French crude pro-

soltex*

A NEW AND REVOLUTIONARY "FIELD-PROVEN" DRILLING MUD ADDITIVE!

From the developers of Driscose, the original CMC, now comes SOLTEX! A black, free flowing, flake material . . . SOLTEX is a modified, high molecular weight hydrocarbon compound that is soluble in both oil and water. It offers all these outstanding benefits:*

Stabilizes Shale Sections—The addition of SOLTEX has already corrected or prevented shale troubles in many wells. One Louisiana offshore well had drilled into salt and two attempts to deviate the hole with whipstocks failed because of sloughing shale and thick wall cake. After adding 5 lbs./bbl. of SOLTEX to the system, no further hole trouble was encountered and a 30° deviated hole was successfully drilled from the third whipstock to final T.D. In addition to controlling shale, the torque and drag of the drill pipe was reduced.

The Anahuac Shale in the Texas Gulf Coast area is noted for causing trouble. Recently, on a well drilled near Hitchcock, Texas, the usual difficulties expected from "shale balling" were avoided by adding 5 lbs./bbl. of SOLTEX to the mud before drilling into this shale section. The well was completed without incident.

Inhibits Dispersion of Drilled Solids—Laboratory data and field experience show that the effects of solids build-up of muds containing SOLTEX is lower than for other types of muds. Even muds with inhibited filtrates are improved. This results in less jetting and reduces the need for chemical treatment which makes possible more savings.

SOLTEX Protects Against Clay Solids

	Concentration lb./bbl.	Total Bentonite Added, lb./bbl. 0	20	30
		(Plastic Viscosity/Yield Value)		
Base Mud—	0	2/0	13/9	41/62
SOLTEX—	10	3/0	9/4	17/16

Replaces Oil In Many Muds—Geologists are sometimes handicapped by staining and fluorescing caused by oil in the mud. Replacing oil with SOLTEX in such muds provides a dull yellow fluorescent background for an easily recognized reference.

The use of SOLTEX as a replacement for oil also provides other benefits. For example, in the Alta Loma Field, Galveston County, Texas, wells drilled to a T.D. of 12,000′ normally use from $3,000 to $6,000 worth of diesel oil. On one such well drilled in this field, $5,678 worth of SOLTEX was used to replace oil. This offset the cost of diesel oil *plus* an additional $2,000 to $4,000 worth of shale control material that ordinarily would have been used. Also, indirect savings resulted from better control of fluid loss and flow properties.

Increases High Temperature Resistance—In most drilling muds, extreme high temperatures create problems in controlling viscosity, gel, and water loss. SOLTEX mud systems allow more exact, trouble-free control of these properties at high temperatures and pressures.

SOLTEX in High Temperature Mud

Concentration lb./bbl.	Initial AV (a)	Initial WL (b)	10 Hrs at 300°F AV	10 Hrs at 300°F WL	10 Hrs at 300°F Bos (c)	300°F—500 psi Test WL	300°F—500 psi Test Cake
0	37	8.4	44	10.2	700	19.6	5/8
4	39	6.4	35.5	6.6	NM	NM	NM
6	37.5	5.6	35.5	6.0	350	10.9	1/4
8	37.5	6.0	35	5.2	NM	9.0	3/16

(a) Apparent Viscosity (b) Water Loss (c) Boshears-Unit Measure of high temperature gelation. NM—Not Measured.

Multiple Benefits Reduce Drilling Costs—The examples above indicate only a few of the many benefits you can expect from versatile SOLTEX. Results from numerous test wells show that SOLTEX complements the effectiveness of Driscose to extend water loss control, to toughen and reduce filter cake, reduce torque on the drill pipe, improve lubrication of the drill bit, and emulsify oil. Because of these multiple benefits, *SOLTEX can reduce your drilling costs!* Field-proven performance has clearly established SOLTEX as . . . "one of the most important mud discoveries since Driscose, the original CMC material".

For more complete information on amazing new SOLTEX—see your Drilling Specialties Company Representative . . . or contact your mud dealer.

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Bartlesville, Oklahoma

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duction counted in the BRP report, 17,080 b/d, came from the two West African nations of Gabon and Congo Republic, the former Middle Congo.

While total French oil industry expenditure in 1961 will be 8.2% lower than 1960, it will reach a healthy $458.8-million, according to the BRP forecast.

During 1961, exploration in the French Community of Nations will absorb $165-million, and extension and development of production another $69.7-million. Equipment for fields and pipelines will cost $138.4-million and miscellaneous equipment $13.1-million.

Investment in refining, distribution, and liquefaction of methane will add up to $36.4-million, and direct investment in petrochemical manufacture $5.9-million. Debt reduction is expected to take $15.2-million.

Finally, $17.7-million is earmarked for exploration and $202,000 for production in countries outside the franc zone.

Of the 1961 sum, foreign oil companies and the French major, Cie. Francaise des Petroles, will account for $56-million, the BRP said.

Government agencies will supply $48.3-million, and $331.1-million will come out of producing companies' profits.

Top priority in 1961 will go to a stepped up exploration program in the newly independent states of franc-zone Africa, according to the BRP.

The French oil industry is already engaged in an intensive effort in these countries. A total of 64 holes were drilled in 1960 in the area, 16 were completed as oil wells and the rest were dry.

Cubans Rhumba For Tanker Funds

HAVANA—The famous wiggle of the rhumba launched a Cuban campaign to build a "petroleum fleet" last week.

The Cuban Workers Confederation is asking workers to contribute a day's pay each to build tankers. Its drive was dramatized in a Carnival parade by a tractor-drawn miniature tanker with a female "crew" of generously displayed beauties and a truck-mounted 30-ft. derrick with a similar group, tin-hatted and rhumba-wiggling.

What's New / AROUND THE WORLD

WEST GERMANY—Caltex may build its first German refinery in the Frankfurt area. According to an announcement by the Hesse state government, Farbwerke Hoechst is negotiating for purchase of land to be sublet to Caltex for construction of a refinery. Hoechst is interested in the project as a supply source for its planned expansion of petrochemical production.

•

IRAQ—Oil Minister Mohammed Salman became Iraq's uncontested oil policymaker with Premier Kassim's blessing last week. A new decree abolished autonomous government oil agencies set up after the revolution, placing responsibility for all oil affairs in the Oil Ministry. It empowered the Oil Minister alone to draw up and execute oil policy, assisted by an administrative council and one representative each from the Ministries of Finance, Trade, Planning, and Defense.

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WEST GERMANY—In an apparent move to line up more outlets, Frisia, Germany's newest refiner, has adopted a pricing policy favoring the small-volume service station operator.

Frisia will give the biggest discounts from retail price to service stations with low sales volume, instead of to larger operators as is usually the case in Germany.

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SPAIN—General American Oil Co. of Texas has been awarded its first mainland Spain exploration rights in its own name, the 150-sq. mi. Zuera tract, in northern Spain. General American is also a partner, along with INI, a government agency, in Valdebro, which holds acreage in Spain and the Spanish Sahara.

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IRAN—Product exports from the Abadan refinery remained choked off last week, following the mid-February eruption of a chronic political dispute between Iraq and Iran over port rights. The International Consortium's average 350,000 b/d crude runs at Abadan were down to some 155,000 b/d. Only minor quantities of bunkers, fuel oil, and diesel fuel, shipped by pipeline to the Bandar Mashur crude terminal, were moving out for export.

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AUSTRALIA—Lube-importing Australia expects to have a surplus for export on completion of a third lube oil plant—this one planned by Shell. The $13.5-million unit will be installed at Shell's Geelong refinery, near Melbourne. British Petroleum and Caltex have similar projects.

•

PAKISTAN—Pakistan will get $30-million in credits for oil exploration from the Soviet Union, repayable at 2½% interest, over 12 years. The money will be used for equipment, materials, and expenses of Russian technicians. The joint exploration program will end in 1965.

•

PAKISTAN—Pakistan Petroleum, Ltd., has begun exploration in a new area of West Pakistan on acreage recently granted. The permits cover the Sand Sea of the Sanghar and Khisar areas, in the southeastern corner of West Pakistan. PPL is a subsidiary of Burmah Oil Co., Ltd.

•

WEST GERMANY — Continental Oil, in a 50-50 joint venture with Deutsche Erdoel, of Hamburg, will build a multimillion-dollar petrochemical plant near Hamburg.

The new firm, Condea Petrochemie GmbH, will make Conco's "Alfol" line of industrial alcohols for sale in the six-nation Common Market. Ethylene from DEA's refinery at Heide will be the feedstock.

•

EGYPT—Petrofina's 20% capital share in COPE—the joint-venture producing company in Sinai—was placed under government custody last week, along with other Belgian-owned properties. In effect, Petrofina and Italy's ENI jointly control the company, since their interests are held through a Panamanian firm that they jointly control, and which in turn holds a 51% interest in COPE. The other 49% is Egyptian.

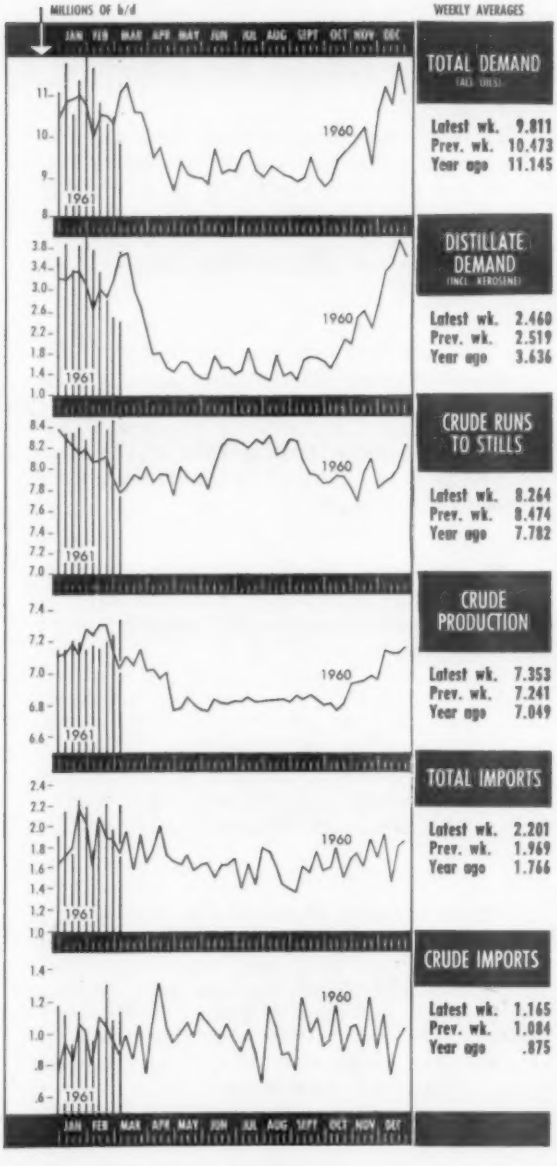
PETROLEUM WEEK'S Fingertip Figures

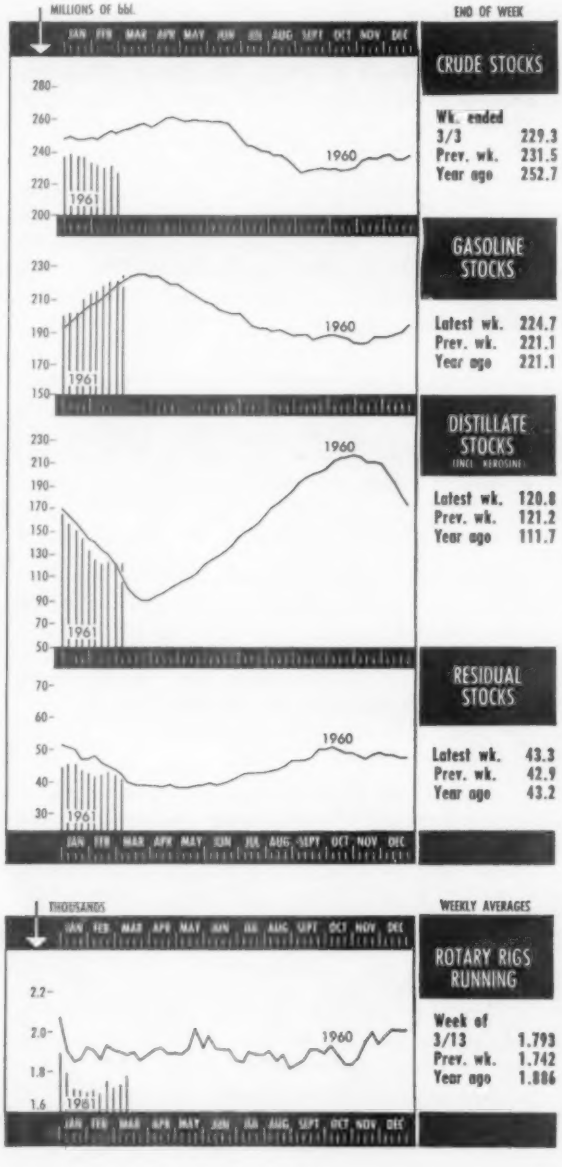
Total demand for the latest four weeks skidded 384,000 b/d from the comparable period a year ago. Demand for all oils averaged 10,360,000 b/d for the four-week period, compared with 10,744,000 b/d last year.

The sag in demand—which can be attributed squarely to heating oil—will become more marked as the month passes. March weather so far has been mild compared to last March, which was the coldest month of that winter. Demand for distillates slipped 428,000 b/d from a year earlier. For the past four weeks it has averaged 2,797,000 b/d, compared with 3,225,000 b/d in 1960. During this period, only 4,770,000 net bbl. of distillates were moved out of inventories, compared with 30,337,000 bbl. last year.

The brightest note in this week's figures is the 210,000 b/d drop in crude throughput. Refinery runs fell to 8,264,000 b/d from the all-time high of 8,474,000 b/d the previous week. Runs for the four-week period averaged 8,390,000 b/d—417,000 b/d higher than the comparable weeks a year ago.

All figures below are for the week ended Mar. 10 unless otherwise noted.





Company Developments

The protective coatings division of Pittsburgh Chemical Co. is de-emphasizing geographical distribution of its products. The company has set up a new plant to handle nationwide marketing, and has organized division marketing into two sections—industrial coatings and pipeline coatings.

•

Gulf Research & Development Co. is moving its technology laboratory from its Philadelphia refinery to Irwin, Pa. Some 150 scientists and technicians will start moving in a month.

•

An internal coating for gas transmission lines which can be applied during rain or in high humidity was demonstrated last week by Bradco Plastics, Inc., in Houston. The epoxy coating was applied to a 30-in. pipe to eliminate pin-holes.

•

National Supply Co. will shift its domestic oilfield equipment sales headquarters from Pittsburgh to Dallas in mid-May. Thomas B. Herndon, manager of domestic sales, says the shift will involve the transfer of 25 people.

•

Martin-Decker Corp. has added a new laboratory to its facilities at Long Beach, Calif. The humidity- and temperature-controlled lab contains calibration equipment certified by the U. S. Bureau of Standards for pressure- and load-measuring instrumentation.

•

Johnston Testers, Inc., is setting up a Texas network of sonic pump sales and service locations in areas where downhole well conditions are particularly troublesome. Abilene, Corpus Christi, Houston, Odessa, Pampa, and Wichita Falls are included in the network.

•

Expansions

Dowell Division of Dow Chemical Co. is expanding its recently opened oil well cementing activities on the Gulf Coast with a new station in Hattiesburg, Miss. To serve the Gulf Coast area, the company has developed an entirely new two-pump, heavy-duty cementing unit. The Hattiesburg installation provides complete storage of bulk cement, and admixing as well as blending, weighing, and metering facilities.

•

Acquisitions

FWD Corp., Clintonville, Wis., has purchased Wagner Tractor, Inc., Portland, Ore. Wagner, which produces heavy-duty rubber-tired trucks, will be operated as a wholly owned subsidiary.

•

Dashew Business Machines, Inc., Los Angeles, has added more than 100 marketing outlets in key cities of the U. S. by purchasing Universal Data Processing Equipment, Inc., South River, N. J. The latter company produces control panels for programming data processing machines.

•

American Systems Inc., Hawthorne, Calif., has completed acquisition of the instrument division of Micro-Path Inc. The Schlumberger Well Surveying Corp. affiliate acquires all inventories, contracts, and patents of the division, as well as development, manufacturing, and marketing rights.

•

Overseas

The Magcobar division of Dresser A. G. is opening drilling mud facilities in Iran with an eye to eventually expanding its markets to Iraq and other nearby countries.

The division's newly organized affiliate, Sherkat Sahami Magcobar Iran, has started up a recently built production facility at Parandak, some 100 mi. south of Teheran, and is operating barite mining properties in the Alborz Mountains, north of Karaj, and other mining properties in the Seveh area, south of Parandak.

•

Japan's Asahi Chemical Co. says it will move into the petrochemical field by making polybutadiene and polyisoprene under licensing agreements with Firestone Tire & Rubber Co.

Pending government approval, the company says it plans to put a $7.5-million plant on stream to produce 10,000 tons of polybutadiene annually by April, 1963.

PAUL E. McGOVNEY has been elected vice-president in charge of Clark Oil & Refining Corp.'s exploration and production division, with headquarters in Denver. He will be responsible for exploration and production operations in the Rocky Mountain area, the northwest territories of Canada, Alaska, and the Arctic Islands. McGovney was formerly associated with Honolulu Oil Corp., holding positions ranging from field geologist to general officer.

P. E. McGovney

R. C. Adam

RAY C. ADAM has been named to the newly created position of vice-president and general manager of manufacturing for Mobil Oil Co., New York. He will be responsible for Mobil's 12 domestic refineries, with a total rated capacity of over 700,000 b/d. Adam, who joined the company in 1946 as process engineer at its Beaumont (Tex.) refinery, became manager of technical services there in 1956, and manager of operations in 1957. In 1959 he was named manager of the economics department of Magnolia Petroleum Co., then Mobil's affiliate in the Southwest. Early last year Adam came to New York as manager of planning and analysis for Mobil, and later in the year was promoted to manager of planning, analysis, and economics for Mobil's parent, Socony Mobil Oil Co.

WILLIAM H. MONTGOMERY, manager of Mobils' manufacturing department, is retiring after 35 years with the Mobil organization.

DR. HANS SCHINDLER has been appointed vice-president of Sonneborn Chemical & Refining Corp., New York, a subsidiary of Witco Chemical Co. Schindler, who joined the company in 1946 as a senior research chemist, was most recently production manager of its refinery at Petrolia, Pa. At the same time, **A. J. Bevevino** was named assistant manager of the Petrolia refinery. Bevevino, who has been with the refinery staff for the past 19 years, has served as plant engineer, research engineer, plant superintendent, and superintendent of shipping.

CAPT. HERBERT S. BREWSTER is the new director of operations for Gulf Oil Corp.'s marine department, succeeding **J. Robert Thompson,** who has resigned. Brewster is moving to New York, where he will be responsible for all domestic and world-wide operations of Gulf's tanker fleet. He has been Gulf's marine agent in Philadelphia since 1959. Brewster, who joined Gulf in 1930 as a quartermaster, became a third mate in 1931, and after that second mate, chief mate, and finally master in 1943. In 1946 Brewster came ashore and was appointed port captain in Philadelphia.

ROBERT W. PERRIN has been given an executive assignment in the office of the marketing vice-president of American Oil Co., in Chicago. He was formerly in the marketing research department as research associate-profit analysis.

PETER I. BEDIZ, Century Geophysical Corp. of Canada, has been elected president of the Canadian Society of Exploration Geophysicists, succeeding **Milton B. Dobrin,** Triad Oil Co. **Jack M. Desmond,** Western Geophysical Co. of Canada, was elected vice-president; **Rodney J. H. Smith,** Imperial Oil Ltd., secretary; and **Nash H. Miller,** United Geophysical Co. of Canada, treasurer.

W. HENRY RYER has been elected vice-president in charge of the foreign operations department, Western Hemisphere and West Africa, for Texaco Inc., with offices in New York. Ryer, who was formerly manager of foreign crude oil purchases and sales, succeeds **Landon B. Derby,** who is being transferred to London as general manager of Texaco Iran, Ltd. Derby succeeds **H. H. Chandler,** who was recently appointed assistant to the president of Texaco, with headquarters in New York.

W. H. Ryer

G. M. Parker

GEORGE M. PARKER, president and a director of Esso Export Corp., has been appointed senior representative for Standard Oil Co. (N.J.) in London, and shareholder representative for its affiliated companies in the United Kingdom, Norway, Sweden, Denmark, and Finland. Parker will resign from his present position with Jersey's international marketing affiliate in May. In his new position, he succeeds **Paul J. Anderson,** who has been nominated for election to Jersey Standard's board of directors. Parker served from 1936 to 1943 as marketing advisor for Jersey in Europe, North Africa, the Near East, and Latin America. He became vice-president of Esso Export in 1950, living in London until 1953, when he was elected executive vice-president and director for Esso Export, in New York.

CAPT. MILTON BREECE has been named operations manager in Humble Oil & Refining Co.'s marine division, which is moving its headquarters from New York to Houston this spring. He was most recently manager of the company's Port of New York office. In his new position, he succeeds **Lawrence J. Hodgkins,** who is retiring. Breece has served with affiliates of Standard Oil Co. (N.J.) since 1933.

M. Breece

H. Dupre

HARRY DUPRE has been appointed assistant chief petroleum engineer for The California Co. Division of California Oil Co., with offices in New Orleans, succeeding **William J. Hunter,** who moves to California Oil Co., Western Division, in Denver, as chief engineer, production department. Dupre has been area superintendent of the California division's Bay Marchand oilfield at Leeville, La., since 1954.

PETER C. SMITH moves up to district geologist for Pan American Petroleum Corp.'s Houston district. He has been area geologist there since 1959. Smith joined the company as a junior geologist in the New Orleans district office in 1952.

H. W. WITTER has been appointed manager of operations of the West Coast pipe lines of Mobil Oil Co. at Torrance, Calif. He was formerly assistant to the manager. West Coast pipeline operations will now be organized into six geographical areas: three in the San Joaquin Valley, and three in the Greater Los Angeles Basin. Named as area supervisors are: **R. E. Dafoe, C. A. McDonald, J. W. Hazzard, G. F. Pitzer, A. W. Lemberger,** and **C. A. Rhoton. J. B. Goza,** formerly division engineer of the Houston division of Magnolia Pipe Line Co., has been appointed manager of engineering for West Coast pipelines. **W. C. Meek,** supervisor of rights-of-way, surveying, and mapping, is new manager of rights-of-way and claims. **W. H. Webb** has been named manager of oil movements with headquarters in the Mobil Building, Los Angeles. **C. D. Grant** has become an administrative assistant, in charge of the clerical and accounting activities of West Coast pipelines. **D. P. Dowling,** formerly administrative assistant, employee relations department, for Magnolia, has been transferred to Los Angeles as manager of employee relations for the West Coast pipelines operations.

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DANIEL H. BARR has been promoted to assistant vice-president, marketing, for the Oil Well Supply Division of United States Steel Corp., with offices at division headquarters in Dallas. Barr first joined U.S. Steel in 1940 as an engineer at the Homestead Works, Pittsburgh, and after that moved to the Johnstown Works of Carnegie Illinois Steel Corp. He left Johnstown in 1947 to join Oilwell as administrative assistant on the president's staff. In 1948 Barr became general manager, production planning and procurement, and in 1955 assistant to the vice-president, sales. He was most recently director, vendor products.

J. T. Pitts

D. H. Barr

J. T. PITTS is the new sales manager of Minneapolis-Honeywell Regulator Co.'s Brown Instruments division, with offices in Philadelphia. He succeeds **J. A. Robinson,** who has joined the company's six-division industrial products group to coordinate expanding activities in the metals producing areas. Pitts, who joined Honeywell in 1945, held sales positions in Charlotte and Durham, N.C., before going to Houston, where he was branch manager from 1952 to 1958. He was most recently southwest regional manager, with headquarters in Dallas, responsible for all industrial, commercial, residential and home product sales in Texas, Oklahoma, Louisiana, Kansas, and parts of Arkansas, New Mexico, Mississippi, and Missouri.

LLOYD SKAGGS has joined TRW Computers Co. as district sales manager in Houston. He will be responsible for application and sales of control computer systems in the Southwest region. Skaggs was formerly in charge of technical computing for Cosden Petroleum Corp., Big Spring, Tex. He has also been associated with Gulf Oil Corp. and Lummus Co. TRW Computers, a division of Thompson Ramo Wooldridge, Inc., provides RW-300 computer systems for automatic control of industrial processes.

HERBERT R. KEITH has been elected president and a director of Service Bureau Corp., New York, a subsidiary of International Business Machines Corp. Keith was formerly director of marketing services for the parent company. Keith who joined IBM in 1933, has served as district sales manager, assistant accounting machine sales manager, assistant director of product planning and market analysis, and executive assistant to the executive vice-president. In his new position, Keith succeeds **Frank T. Cary,** who has been appointed to a newly created position on the IBM corporate staff.

R. A. KENT has moved to the West Texas district headquarters of Baker Oil Tools, Inc., in Odessa, as a result of a new Baker program to have trained design engineers permanently assigned to most of its districts. Kent's responsibilities will be to supply Baker customers with technical advice on new products, performance data on existing products, information on complex technical hookups, and assistance on any project. He will report to **J. T. Mitchell,** district manager at Odessa. Kent joined Baker as a design engineer in 1955, and was most recently senior staff engineer.

CAPT. IVAN MONK, USN (Ret.), will join De Laval Steam Turbine Co., Trenton, N.J., as manager of the service and repair department, effective Apr. 1. He succeeds **J. W. Robinson,** who is retiring. At the time of his retirement, Monk was director of the machinery division, Bureau of Ships.

H. W. HARMS has been appointed manager, export field engineering, for Hughes Tool Co., Houston, and **Roscoe R. Aulick** has been named product manager, industrial products. The two appointments are a part of a new Hughes program to strengthen its services in domestic and foreign areas, and to give added emphasis to its industrial products. Harms has been manager of field engineering services for the company since 1953, and Aulick was most recently Hughes' manager of product observation. **N. B. Thomas** was named product manager, tool joints in the new program, and **John R. Hays** becomes manager, market research. Thomas was formerly assistant to the manager of field engineering services, and Hays has been in the company's planning and coordination department.

H. W. Harms

J. Martin

JOE MARTIN has been promoted to manager of production machinery sales for Continental-Emsco Co., with headquarters at the company's offices in Dallas. **Morris Caraway** succeeds Martin as division production equipment specialist at Tulsa. Caraway was formerly district production machinery sales engineer for C-E in Wichita Falls. Continental-Emsco's new D-B specialists are

Harlan Cook, Oklahoma City; **Eldon Davis,** Winnsboro; Tex.; **James Sorrels,** Ellinwood, Kan.; **James Allen,** Snyder, Tex.; and **James Lowery,** Jena, La. **Latham Ryan,** district production machinery specialist, transfers from Hobbs, N.M., to Lubbock, Tex.

R. J. **GRAHAM** has been promoted to sales engineer in the Mt. Vernon (Ohio) branch sales office of Cooper-Bessemer Corp.'s east-central sales district. Graham joined Cooper-Bessemer in 1958 as a sales engineer trainee. In his new position, he will report to **J. R. Craine,** assistant manager of the east-central district and Mt. Vernon branch manager.

RALPH V. WILHELM has been appointed personnel director of the electronic data processing division of Minneapolis-Honeywell Regulator Co. Named to his former post of personnel manager for the division's engineering branch is **Richard T. Bueschel,** who has been technical employment supervisor at the division's manufacturing plant at Brighton, Mass. **Donald F. Brosnan** is the new branch manager of the division's Washington (D.C.) branch sales office, which has been moved to Arlington, Va. He was formerly manager of the data processing division's Detroit office.

J. A. Thierry

M. H. Birk

JOHN ADAMS THIERRY, vice-president of Bucyrus-Erie Co., South Milwaukee, Wis., has been elected a director of the company, and **MERLIN H. BIRK** has been elected a vice-president. Thierry has also been the company's secretary since 1958, and general attorney since 1957. He is vice-president, director, and manager of operations for Bucyrus-Erie Co. of Canada, Ltd., Guelph, Ont. Birk has been controller of Bucyrus-Erie since he joined the company in 1959, and before that was assistant to the president of Illinois Tool Works, Chicago, and executive vice-president and treasurer of Waukesha Foundry, Waukesha, Wis.

CHARLES S. LARKEY has joined Earlougher Engineering, Tulsa, as a consultant to its data processing department. He will act as liaison between the consulting company's engineering and data processing departments and its clients. Larkey, who was associated with Sinclair Oil & Gas Co. for 37 years, organized its data processing department, and managed it until his retirement four years ago.

C. S. Larkey

M. C. Malloy

MICHAEL C. MALLOY has been appointed western divisional sales manager, lubricated plug valve division, for Walworth Co., with offices in Houston. He will be responsible for lubricated plug valve sales and service. Malloy has been a sales engineer for Walworth and its subsidiary, Grove Valve & Regulator Co., for the past three years, and before that held a similar position with Marshall J. Brown Co.

ROBERT L. GOLLNICK, evaluation geologist, has opened consulting offices in Houston. He had been senior staff geologist with Ralph E. Davis Associates for the past ten years, and had previously been senior evaluation geologist with Humble Oil & Refining Co.

DON PHILLIPS moves up to plant engineer at the Houston plant of the National Supply Division, Armco Steel Corp. Phillips joined the engineering department at Houston in 1957, and was later appointed assistant development engineer.

B. G. Barefield

J. Boyd

B. G. BAREFIELD moves up to sales manager of Oil Center Tool Co.'s Rocky Mountain district at Casper, Wyo., and **JERRY BOYD** has been promoted to sales manager of its Four Corners district, at Farmington, N.M. Barefield, who has been with OCT since 1948, was most recently located at its Houston sales office. Boyd has been a sales service representative.

WILLIAM B. BATEMAN, a member of the petroleum division of the Chase Manhattan Bank, has been elected a vice-president. At the same time, **Robert F. Calman** and **Robert K. Herr** were appointed assistant treasurers in the petroleum division. The division is a part of the bank's United States department. Bateman, who joined the bank in 1947, was appointed an assistant treasurer for the petroleum division in 1950, and was promoted to assistant vice-president in 1953.

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FOR SALE

For Sale, one quart canning machine with Bowser filler. In good condition. FS-6257, Petroleum Week.

Too Much Time Wasted on Resid Imports

FOR THE PAST SEVERAL WEEKS, the battle between coal and oil concerning the question of residual imports has occupied the main stage of the Washington scene.

Every variety of weapon from the flag to distressed areas has been thrown into the arena, and most of the talk has been pure emotionalism and nothing else. The two main gladiators defending our national interests, President John F. Kennedy and Interior Secretary Stewart L. Udall, have been bombarded with a barrage of sheer unadulterated political hogwash.

Meanwhile, the innocent and long-suffering consumer and the national interests of our country have been forgotten and disregarded by the vociferous coal lobby.

It is self-evident from the hearing held recently by Secretary Udall on the subject of residual imports that coal stands to gain little and the domestic oil industry even less by the continued maintenance of restrictions on residual fuel imports. In fact, the complete elimination of these restrictions would have no noticeable effect on the domestic oil producer. And yet, in joining forces with the coal industry, not only are domestic oil interests helping the cause of a competitive fuel, but they are also diverting effort from the much more important and justified subject of restrictions on imports of crude and refined products.

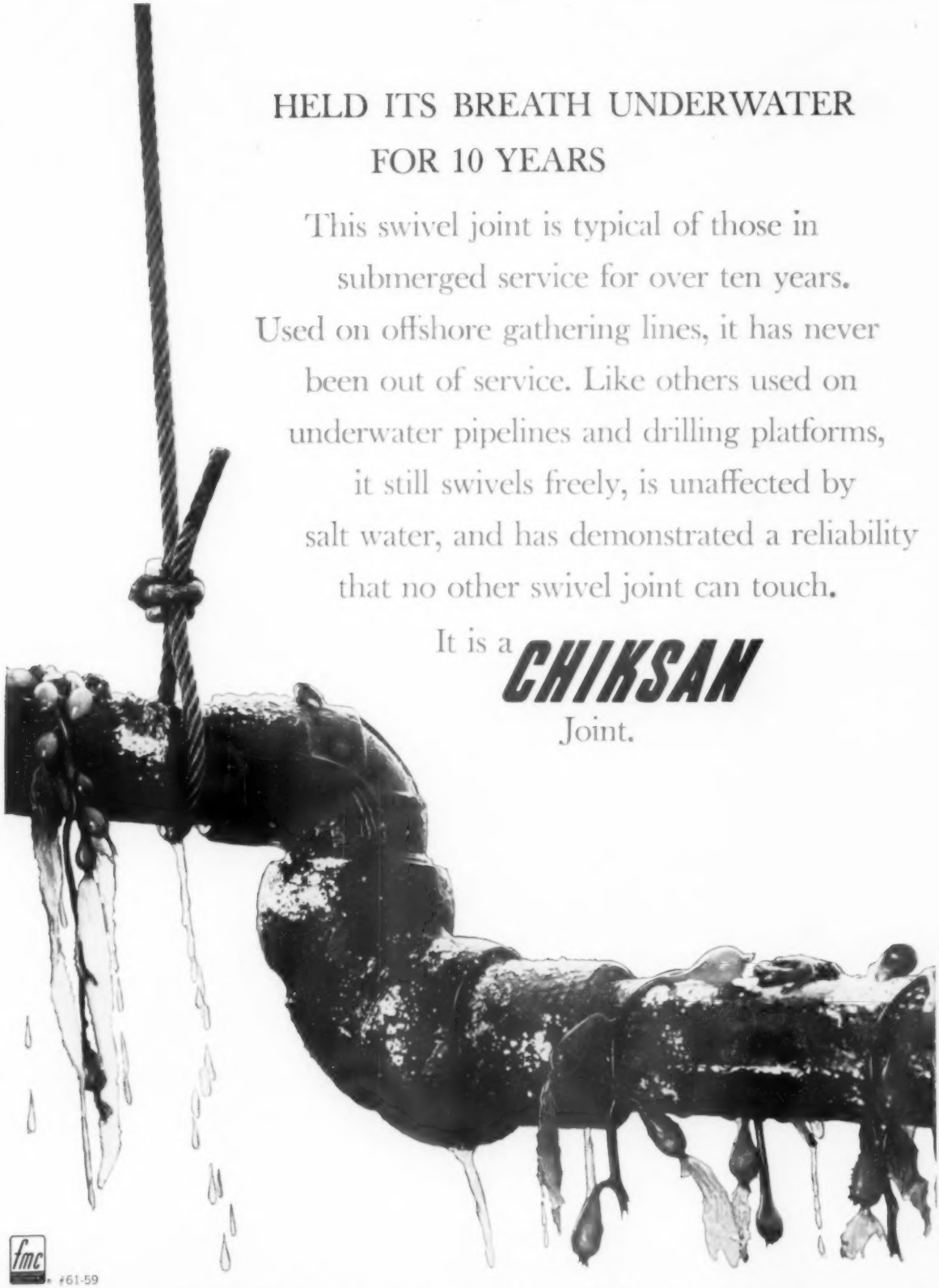
WE CAN'T HELP BUT FEEL that the domestic oil industry is being short-sighted and naive. The industry has just lost a battle with coal with the result that, despite all the efforts of our industry to prevent any action on a fuels study by Congress, such a study is going to be made.

It seems self-evident from all the facts that, in a desperate effort to create "issues," certain segments of the oil industry are being led down the garden path by coal groups in the fight to continue restrictions on residual imports.

It also seems self-evident that, once coal has won this battle, it will then swing its guns onto the next competitive fuel, since coal producers would gain nothing in any successful fight against residual imports unless they could knock off gas competition, too.

THE BASIC QUESTION is: When is the petroleum industry going to stop allowing the issue-creators to cause it to engage in internecine warfare over such an unjustified and unimportant issue as residual import restrictions? These imports can be controlled by simply holding their use to fuel, and making it a criminal offense to coke imported residual for conversion into higher-value products.

The entire petroleum industry needs to realize that it is facing opponents who not only know what they want, but who are united in their attack on the oil industry.



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If you are planning to drill extra deep wells, get the protection offered by *High Strength* pipe unitized with Hughes "Flash-Weld" tool joints. Hughes Flash-Welding is now in its 23rd year.

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